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OFFICIAL
PUBLICATION
OF THE
PROCEEDINGS
AMERICAN
ASSOCIATION
OF
TEXTILE
CHEMISTS
AND
COLORISTS

American Dyestuff Reporter was founded in 1917 and the Textile Colorist and Converter (formerly Textile Colorist) was incorporated with it in January, 1949. Published every other Monday, by the **HOWES PUBLISHING COMPANY, INC.**, 44 East 23rd Street, New York 10, N. Y. **C. R. Howes**, President; **Ernest J. Finan**, Executive Vice-President; **Norman A. Johnson**, Vice-President & Treasurer; **Myron D. Reeser**, Vice-President; **Clara Patrick**, Secretary.

Telephone SPring 7-9364

AMERICAN
DYESTUFF REPORTER
DEVOTED TO TEXTILE WET-PROCESSING

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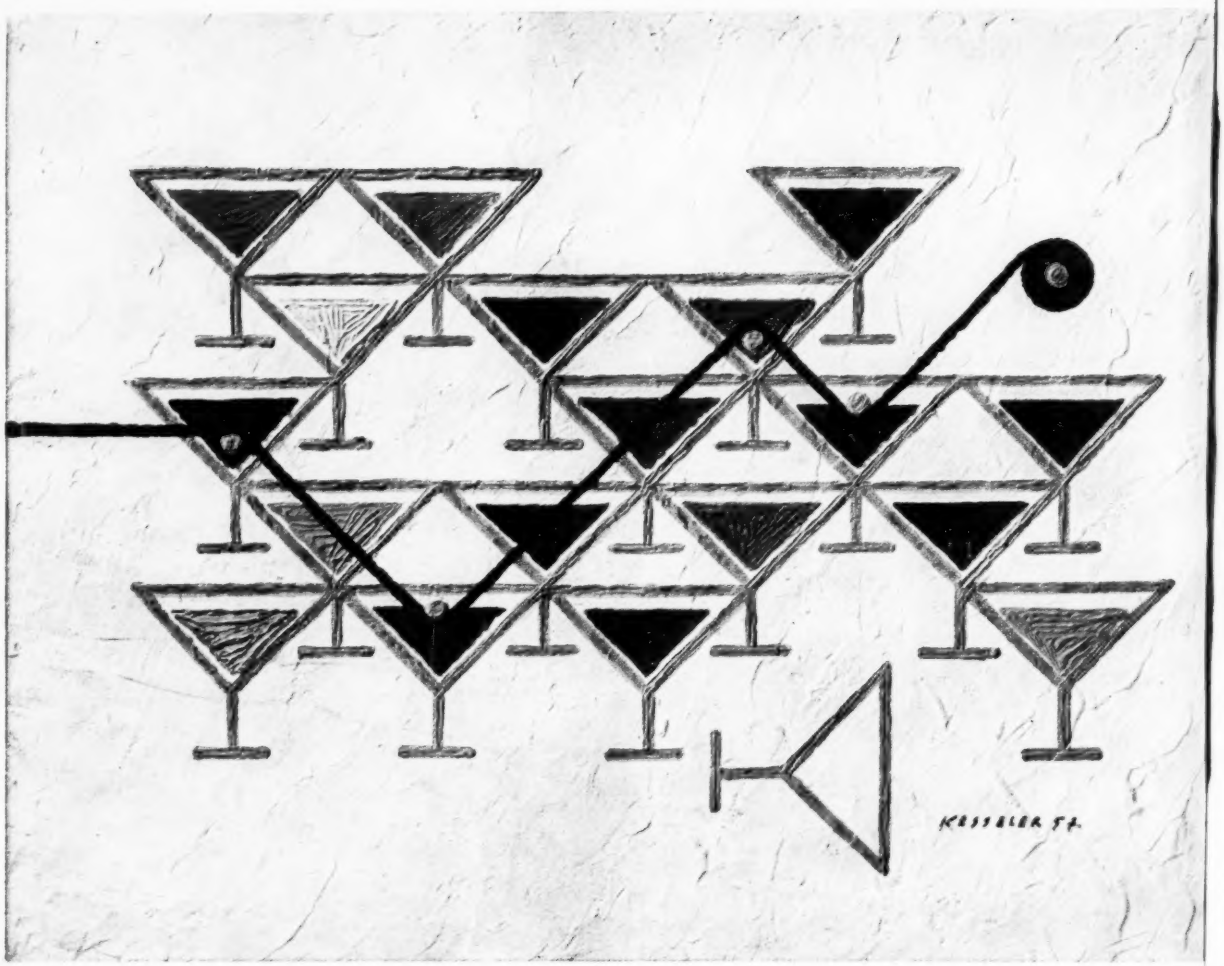

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AMERICAN
DYESTUFF REPORTER

Volume 48 August 10, 1959 Number 16

CARE LABELLING CODE FOR TEXTILE ARTICLES IN EUROPE*

M RINGEISSEN

Translated by

P J WOOD
Royce Chemical Co
Carlton Hill, NJ

TRANSLATOR'S FOREWORD: Evidently the interest in informative labelling has been intensified by the creation of the "common market" in Europe.

Last December 19th, K McLaren read a paper before the Manchester Section of the Society of Dyers and Colourists entitled "FELISOL—an International Informative Label for Color Fastness", from which we learned some interesting facts.

Mr McLaren harks back to the beginnings of the use of vat colors, and more particularly to those of the anthroquinonoid series, discovered by Rene Bohn, a Swiss chemist working at Badische Anilin-& Soda-Fabrik AG.

In spite of the opposition of some dyers and printers, on account of the more difficult method of application, and of *all* merchants (the choice of the word "all" and the italics are ours) on account of increase of cost, the members of this superior class of dyestuffs had grown to about 100 in 1910.

The German I G, to stimulate interest in the new fast colors, devised what was possibly the first informative label for use on goods dyed or printed with them. These were the world-known Indanthrene labels.

The Corporation even opened stores in which only goods dyed or printed with Indanthrene dyes were sold; they were called Indanthrene Hauser.

In 1952, after the I G had been split up, four of the component concerns formed the Indanthrene Trademark Association to continue the Indanthrene publicity, including the use of the label.

While the dyers and printers of continental Europe liked the popularity of the vat colors, for which the educated public was now willing to pay a premium price for the extra fastness indicated by the label, they were not too well pleased that use of the label and contingent benefits required them to buy the dyestuffs from only one country—Germany.

The Fédération Internationale des Imprimeurs sur tissus (FIIT) and the Association Internationale de la Teinture Textile (AITT) were petitioned by the dyers and printers to sponsor an international label.

The upshot of the matter was the foundation of the International Association for the FELISOL Fastness Label. Its headquarters are in Zurich.

The name of the label is taken from the original French name of the Association, *FÉdération du Label Internationale de SOLidité*. All capitals, FELISOL.

Membership is open to approved dyestuff manufacturers and national organization of dyers or printers in each country, consisting of six or more users. In April of this year the organization had the following members:

Dye Manufacturers	16	
National organizations	6	
Holland	57	members
Italy	46	"
Switzerland	33	"
Austria	17	"
Belgium	17	"
Spain	9	"

It's a start.

The matter of labelling textile manufactured articles as to their fiber content has been a matter of controversy both in this country and abroad for many years. The establishment of the "Common Market" in Europe has brought about more serious consideration of this matter and with it the subject of the advisability of labelling goods with easily identifiable signs, regarding colorfastness to various agencies.

This article reports the latter part of this problem.

INTRODUCTION

THE tendency of the specialists of the various countries who have met to consider the question of labels carrying instructions for the care of textile articles has been to try to create a set of labels carrying symbols easily understood both by the housewife and the laundryman and drycleaner. To this end, we have tried to use "speaking images" which would suggest the treatment which they graphically portray.

It seems to be agreed that such a ticket should contain four types of information:

1) The washing temperature.

2) Whether or not chlorine may be used.

3) Whether the article may be ironed or not. If it can be ironed, the temperature that can be used.

4) Whether solvents may be used in drycleaning and which solvent is suitable.

"SPEAKING IMAGES"

1) WASHING TEMPERATURE ——There have been proposed a kier for severe washing, a laundry machine for medium washing, a tub bearing on it the washing temperature.

The temperatures are those of the European Code of Fastness:

Light washing (a) 40°C.
Medium wash (b) 60°C.
Heavy washing (c) 95°C.

One difficulty arises if one wants to use the washing symbol in color, using the three colors of the International Traffic Code of which red

* Translated from the French of an article in *Rayon et Fibres Synthetiques.*

CODE D'ETIQUETAGE D'ENTRETIEN DES TEXTILES
CARE LABELLING CODE FOR TEXTILES
CODE FÜR BEHANDLUNGSKENNZEICHNUNG VON TEXTILIEN

Lavage fort (95° C) Severe wash Kochwäsche
Lavage moyen (60° C) Medium wash Heisswäsche
Lavage faible (40° C) Light wash Feinwäsche
Interdiction de lavage Do not wash Nicht waschbar
Léger blanchiment au chlore autorisé Light chlorine bleach allowed Leichte Chlorbleiche erlaubt
Blanchiment au chlore interdit Do not bleach Chlorbleiche verboten
Repassage à chaud Hot ironing Heissbügeln
Repassage à température modérée Ironing at moderate temperature Bügeln mit Mittelhitze
Ne pas repasser Do not iron Bügeln verboten
Tous solvants (trichloréthylène inclus) All solvents (trichlorethylene incl) Alle Lösungsmittel (einschliesslich Trichloräthylene)
Perchloréthyène ou essences minérales Perchlorethylene or benzine Perchoräthylen order Benzinlösungsmittel
Essences minérales seulement Benzine only Nur Benzinlösungsmittel
Ne pas nettoyer à sec Not to be drycleaned Nicht chemisch reinigen

represents "stop" (not washable). Only two colors are left, amber and green, with which to indicate three washing temperatures.

We propose green for washing at 95°C and amber for washing at 40°C. Washing at 60°C, being intermediate between these two temperatures, would be indicated by a "tub" green inside and amber outside.

From the point of view of the housewife, only temperatures of 40°C and 95°C are used. The washing temperature of 60°C was unanimously demanded by the laundry industry, this temperature being in use for the washing of certain articles, particularly those made of superpolyamides.

2) USE OF CHLORINE——It is difficult to imagine a "speaking symbol" for this purpose; The Dutch propose a green triangle for a ticket permitting the use of chlorine and a red triangle for a ticket prohibiting its use. The Danes suggest putting the word "Chlor" in the wash-tub symbol, where it is allowable.

3) IRONING———The unanimous choice was a sketch of an iron, colored green, for those fabrics that will stand the same temperature as cotton; amber for such articles that require the same temperature as wool; and a red iron for those goods that should not be ironed at all.

In order to avoid confusion in the case of the red iron, this is also crossed out by a St Andrews cross of the same color.

4) DRYCLEANING———As these instructions are only necessary for the benefit of the dyers and drycleaners, it is unnecessary to use a "speaking symbol."

The following signals were suggested:

the letter "A" indicating that all solvents can be used (All solvents, Alle Losungsmittel);

the letter "P" showing that either perchlorethylene or mineral spirits may be used;

the letter "F" indicating the exclusive use of mineral spirits (White Spirit, Stoddard Solvent, etc.

PROHIBITION

Some countries consider that the red color is sufficient to indicate that the article must not be drycleaned. Others think that the symbol should be crossed out by superimposing on it a St Andrew's cross of the same color.

On May 14, 1958, there took place a meeting of the French and Dutch, which put forth a proposition for a ticket indicating the best way of caring for textile articles which might serve as a base for discussion of establishment of an international Code.

Here is a resumé of the French-Dutch proposal:

1) A printed or woven textile label carrying from left to right three signs and a letter. These items would be in conventional colors used in the International Traffic Light Code: Green—go ahead; Amber—caution; Red—stop.
2) A schematic representation of a tub will show by its color and by the temperature indicated inside it the precautions to be observed during washing. A triangle will show whether chlorine can be used in washing or not. An iron will show how it is to be ironed: if like cotton, the color shall be green; if like wool, the color shall be amber. In the latter case there will be printed alongside the iron the warning: "moderé — vorsicht — caution". The letters A, P, and F, intended for the dyers & drycleaners, show respectively that any solvent at all may be used (A), either perchlorethylene or mineral spirits (benzine) are allowable (P), or only mineral spirits may be employed (F).

We may remark that the coloring of these letters is not material. However, for the sake of uniformity, we propose color-in the letter A in green, P & F in amber. Prohibition of drycleaning will be indicated by the letter A in red crossed out by superimposition of a St Andrew's cross of the same color.

CHARGED SYSTEM

This new procedure involves addition of 4% of a surface-active agent to the solvents used in drycleaning. This has for its object the elimination of spots. Addition of this surface-active agent makes it possible to add to the solvent bath a certain quantity of water, which becomes well dispersed in the organic solvent, the surface-active compound acting as a "solvent bridge". This process is becoming more and more prevalent.

Quite recently we have remarked that many articles which can be cleaned by the use of an organic solvent cannot be cleaned in a "charged system." We believe that it is necessary to review this case, which had not been raised up to the time of the last French-Dutch meeting. We suggest that those articles that cannot be cleaned in a charged system should be marked with a small letter indicating the solvent to be used, while those items which can be cleaned in the charged system should be marked with a capital letter.

EFFICIENT FABRIC LABELLING

In order to insure that the labelling shall be efficaceous, it is necessary that the information on the ticket shall determine the article to which it is attached. It should cover the following:

1) The type of fibers of which the fabric is composed.
2) The fastness of the color.
3) The type of finish applied to the fabric.
4) The type of trimmings and accessories on the garment.

We believe that any article said to be washable at such and such a temperature should not only show no change of shade from the original color, but should not shrink more than 3% in the warp or filling.

CHOICE OF LABEL

The delicate point is to know at which stage the decision shall be made as to which particular ticket shall be attached to the finished article.

According to our information, the Dutch have already laid the foundation for an organization which shall control the application of the correct tickets to the finished articles. In Switzerland, it looks as if the EMPA, the Federal Laboratory of St Gall, would be able to carry out this control. In France, the problem is only partially resolved. While agreement has been reached regarding the principle of labelling, it is felt that some important concerns which control their own manufacturing processes will be able to determine which tickets should be used. The same thing applies in the case of companies which have the qualities of their output controlled by private laboratories.

We believe that marking without control would be a mistake. Labelling would only be damaging to articles put on the market which do not possess the qualities they are supposed to have. The marking with tickets showing the best recommendations for care during use, we are convinced, would purge the textile market and increase the usage of worthy goods.

International exchanges of products becoming more and more usual, increase of tourist travel, and the coming realization of the "Common Market" demand an agreement on ticketing on an international scale. We appeal to all those men of good will at all levels of the textile industry, that each one in his own sphere aid in the establishment of a project which can only prove profitable to the entire textile industry.

On March 3, 1958, Madame Jeanne Picard presented to the Economic Council a report in the name of the Committee of Commerce & Distribution. We will end this dissertation with a short abstract from this report:

"The Economic Council feels that a single Code of Instructions for the maintenance and care of textile articles should be drawn up and made known to the public, materialized by a ticket to be attached to all manufactured articles (garments, etc), so that the industrial and commercial branches of the textile and clothing trades, institutes of research and standardization, the professionals of the garment care industries, and the organizations of consumers may have contact with one another on the national and international level to the end that there may be maximum use of textile products."

COLOUR INDEX
Additions and Amendments

Number 4*

Copies of these lists printed on one side of the paper only probably will be made available. For further details apply to AATCC National Headquarters, P O Box 28, Lowell, Mass.

*The first list was published in the November 3, 1958 issue of *American Dyestuff Reporter*; the second list in the January 26, 1959 issue; and the third list in the May 4, 1959 issue.

VOLUME 1

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	HUE Reddish Yellow Neutrichrome Yellow JRL ..... Fran	
Page 1050	CI 12714 Monoazo (metallized)	CI Acid Orange 92
	HUE Reddish Orange Neutrichrome Orange RL ..... Fran	
Page 1189	Monoazo	CI Acid Red 239
	HUE Bright Red Coomassie Geranine 2G ICI	
	Monoazo	CI Acid Red 240
	HUE Bright Yellowish Red Lissamine Fast Scarlet R ICI	
	Disazo	CI Acid Red 241
	HUE Bright Bluish Red Naphthalene Leather Red A ICI	
	Monoazo	CI Acid Red 242
	HUE Bright Red Supracid Brilliant Red B ..... Fran Literature *FP* 834833	
Page 1189	Monoazo (metallized)	CI Acid Red 243
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	HUE Bright Bluish Violet Neutrichrome Violet BL ..... Fran Literature *FP* 1129702, 1161640	
Page 1305	Anthraquinone	CI Acid Blue 175
	HUE Bright Greenish Blue Carbolan Brilliant Blue 2G ICI	
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	CI 34906 Trisazo (metallized)	CI Acid Brown 216
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Page 1404	Monoazo (metallized)	CI Acid Black 98
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Supracid Brilliant Red B ..... Fran
Literature
FP 834833

Neutrichrome Grey 6BL ..... Fran
Literature
FP 1129702, 1161640

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		HUE Dull Reddish Yellow Solochromate Fast Yellow R ICI
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1480	Monoazo	CI Mordant Red 85
		HUE Dull Bluish Red Solochromate Fast Bordeaux BN .. ICI
Page		
1584	Monoazo	CI Mordant Brown 91
		HUE Dull Yellowish Brown Solochromate Fast Brown G ICI
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1615	Monoazo	CI Mordant Black 78
		HUE Black Chrome Fast Black PBLL ..... Fran Literature *FP* 1173832 *Belgian P* 566096
	Monoazo	CI Mordant Black 79
		HUE Bluish Grey Chrome Fast Grey BRL ..... Fran Literature *FP* 1173833 *Belgian P* 566852
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		HUE Polyester Bright Reddish Yellow Esterophile Light Yellow 2RL ... Fran Literature *FP* 1176871, 1187253

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1686	Disazo	CI Disperse Orange 22
		HUE Polyester Bright Yellowish Orange Esterophile Light Yellow 3RLL .. Fran Literature *FP* 1187253
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1703	Disazo	CI Disperse Red 44
		HUE Polyester Bluish Red Esterophile Light Red BL ..... Fran Literature *FP* 1187252, 1187253
	Monoazo	CI Disperse Red 45
		HUE Polyester Bright Red Esterophile Light Scarlet 3RL ... Fran Literature *FP* 1187252, 1187253
	Monoazo	CI Disperse Red 46
		HUE Polyester Yellowish Pink Esterophile Light Orange 2RLL .. Fran Literature *FP* 1164365, 1187253
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1711	Disazo	CI Disperse Violet 16
		HUE Polyester Bright Reddish Violet Esterophile Light Red 6BLL .... Fran Literature *FP* 1187253
	Anthraquinone	CI Disperse Violet 17
		HUE Polyester Bright Reddish Violet Esteroquinone Light Red 4BLL .. Fran
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1729	Anthraquinone	CI Disperse Blue 39
		HUE Polyvinyl Bright Blue Acetoquinone Pure Blue RH .... Fran Literature *BP* 765356 *USP* 2795477 *FP* 1085424 *GP* 1012284 *Ital P* 518048

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1729	Anthraquinone		CI Disperse Blue 40
		Hue	Polyester Bright Greenish Blue
			Esterophile Light Blue BJLL ..... Fran

Amendments

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1003	CI Acid Yellow 1	*delete*	Fouramine S ..... Fran
		delete	Naphthol Yellow SS ..... Fran
1005	CI Acid Yellow 5	*add*	Brilliant Acid Flavine 5J ..... Fran
1006	CI Acid Yellow 7	*add*	Brilliant Acid Flavine 10J ..... Fran
		delete	CI Acid Yellow 8
1007	CI Acid Yellow 9	*delete*	Acid Yellow 2S ..... Fran
1008	CI Acid Yellow 11	*delete*	Fast Light Yellow 2G ..... W
		delete	Lutetia Yellow ..... Fran
		delete	Pyrazolone Yellow JF ..... Fran
1009	CI Acid Yellow 13	*add*	Acid Light Yellow 3J ..... Fran
1010	CI Acid Yellow 17	for	Xylene Light Yellow 3GS ..... S
		read	Xylene Yellow 3GS ..... S
		add	Fast Light Yellow 2G ..... W
1012	CI Acid Yellow 21	*delete*	Acid Light Yellow JR ..... Fran
1013	CI Acid Yellow 23	*add*	*Ammonium salt*
			Ink Yellow ASN ..... Fran
1014	CI Acid Yellow 25	*delete*	Amacid Yellow R ..... AAP
1023		*delete*	CI Acid Yellow 45
1027	CI Acid Yellow 54	*add*	Inochrome Yellow JLN ..... Fran
		add	Super Fast Yellow ELNA ..... TAC
1029		*delete*	CI Acid Yellow 58
1032	CI Acid Yellow 65	*delete*	Neutral Silk Yellow J ..... Fran
	CI Acid Yellow 66	*delete*	Acetate Fast Yellow 2J ..... Fran
1035	CI Acid Yellow 73	*delete*	Acid Fluoresceine N ..... Fran
1041		*delete*	CI Acid Yellow 91
1042		*delete*	CI Acid Yellow 94
1043	CI Acid Yellow 98	*delete*	Inochrome Yellow J ..... Fran
1044	CI Acid Yellow 99	*add*	Inoderme Yellow JR ..... Fran
	CI Acid Yellow 100	*delete*	Inochrome Yellow R ..... Fran
1048	CI Acid Yellow 111	for	Dermafast Yellow 3GL ..... S
		read	Derma Light Yellow 3GL ..... S
1049	CI Acid Yellow 112	for	Dermafast Yellow GLN ..... S
		read	Derma Light Yellow GLN ..... S
1050	CI Acid Yellow 114	for	Dermafast Yellow GL ..... S
		read	Derma Light Yellow GL ..... S
1056	CI Acid Orange 7	*add*	Orange II SM ..... Fran
1058	CI Acid Orange 10	*add*	*Ammonium salt*
			Ink Orange JSN ..... Fran
	CI Acid Orange 11	*delete*	Eosine 2J ..... Fran
1059	CI Acid Orange 12	*delete*	Croceine Orange R ..... Fran
1060	CI Acid Orange 14	*delete*	Acid Ponceau 2J ..... Fran
1061	CI Acid Orange 16	*delete*	Acid Orange RN ..... Fran
1062	CI Acid Orange 19	*delete*	Supracid Red 2J ..... Fran
1064	CI Acid Orange 24	*delete*	Resorcinol Brown B ..... Fran
1069		*delete*	CI Acid Orange 37
1073	CI Acid Orange 45	*delete*	Neutral Silk Orange R ..... Fran
1076	CI Acid Orange 51	*add*	Amacid Neutral Brown RN ..... AAP
1078		*delete*	CI Acid Orange 58
1083		*delete*	CI Acid Orange 73
1084	CI Acid Orange 74	*add*	Inoderme Orange J ..... Fran
1086	CI Acid Orange 80	for	Dermafast Yellow 2RL ..... S
		read	Derma Light Yellow 2RL ..... S
1087	CI Acid Orange 82	for	Dermafast Orange RLN ..... S
		read	Derma Light Orange RLN ..... S
		delete	CI Acid Orange 83
1091	CI Acid Red 1	*add*	Acid Phloxine GA ..... TAC
		add	*Ammonium salt*
			Ink Red JSN ..... Fran
1101	CI Acid Red 23	*delete*	Acetophenylene Red B ..... Fran
1104	CI Acid Red 29	*delete*	Chromotrope 2R ..... Fran
1108	CI Acid Red 37	for	Fast Light Red BG ..... YDC
		read	Fast Light Red GL ..... YDC
1112	CI Acid Red 47	*delete*	Brilliant Croceine 9B ..... Fran
1122		*delete*	CI Acid Red 72
1123	CI Acid Red 73	*add*	Brilliant Croceine P ..... Fran
1125		*delete*	CI Acid Red 79
1127		*delete*	CI Acid Red 84
1128	CI Acid Red 86	*delete*	Brilliant Milling Red 2B ..... Fran
1129	CI Acid Red 87	*delete*	Eosine J ..... Fran
		delete	Eosine L, LS ..... Fran
1132	CI Acid Red 92	*delete*	Eosine Blue Shade 2B ..... Fran
	CI Acid Red 93	*delete*	Rose Bengal YB ..... W
1133	CI Acid Red 94	*delete*	Rose Bengale ..... Fran
1134	CI Acid Red 97	*delete*	Acid Leather Scarlet J ..... Fran
		add	Coriacid Scarlet R ..... Fran
	CI Acid Red 98	*delete*	Phloxine 2BI, J ..... Fran
1138		*delete*	CI Acid Red 105
1141	CI Acid Red 114	*add*	Milling Red B ..... Fran
1142	CI Acid Red 115	for	Acid Fast Bordeaux B ..... Fran
		read	Acid Fast Bordeaux BN ..... Fran
	CI Acid Red 116	*add*	Acetacid Brilliant Red BR ..... Fran
1146		*delete*	CI Acid Red 124
1156	CI Acid Red 145		
	in the heading	*add*	CI 23905 Disazo
		add	Light Milling Scarlet 3R ..... Fran
1158	CI Acid Red 152	*delete*	Milling Red N ..... Fran
1169	CI Acid Red 183	*add*	Super Fast Red GRE ..... TAC
1170	CI Acid Red 184	for	Inochrome Brown 2R ..... Fran
		read	Inochrome Brown B2R ..... Fran

Page	Colour Index Designation		

Page	Colour Index Designation		

Page	Colour Index Designation			
1059	CI Acid Orange 11	*delete*	Eosine 2J	Fran
1060	CI Acid Orange 12	*delete*	Croceine Orange R	Fran
	CI Acid Orange 14	*delete*	Acid Ponceau 2J	Fran
			Ink Orange JSN	Fran
1170	CI Acid Red 184	for	Inochrome Brown B2R	Fran
		read	Inochrome Brown B2R	Fran

Page	Colour Index Designation			
1171	CI Acid Red 186	*delete*	Inochrome Pink N	Fran
		add	Super Fast Pink BNA	TAC
1173	CI Acid Red 192	*delete*	Inochrome Pink JN	Fran
1176	CI Acid Red 201	*add*	Inochrome Pink N	Fran
1177		*delete*	CI Acid Red 204	
		delete	CI Acid Red 205	
1178		*delete*	CI Acid Red 208	
1179		*delete*	CI Acid Red 210	
1181	CI Acid Red 214	*add*	Inoderme Red J	Fran
1182	CI Acid Red 215	for	Dermafast Red BL	S
		read	Derma Light Red BL	S
	CI Acid Red 216	for	Dermafast Red 2GL	S
		read	Derma Light Red 2GL	S
	CI Acid Red 217	for	Dermafast Bordeaux RL	S
		read	Derma Light Bordeaux RL	S
1188	CI Acid Red 229			
	in the heading	*add*	Monoazo	
		for	Hue Red	
		read	Hue	
			Leather Red	
			Paper Bright Yellowish Red	
		add	Paper Acid Scarlet RJ	Fran
		delete	CI Acid Red 230	
1191	CI Acid Violet 1	*delete*	Acid Fast Violet RL	Fran
1194	CI Acid Violet 7	*add*	Acid Fuchsine 6B	TAC
1195	CI Acid Violet 9	*delete*	Brilliant Milling Violet B	Fran
		delete	Brilliant Milling Violet 2RLN	Fran
		add	Amacid Fast Red Violet 2R	AAP
1196	CI Acid Violet 12	*add*	Amido Naphthol Red 2B	TAC
1198	CI Acid Violet 15	for	Acid Brilliant Violet 6BN	YDC
		read	Acid Violet 6BN	YDC
1199	CI Acid Violet 17	*delete*	Brilliant Milling Violet 3B	Fran
1204	CI Acid Violet 27	*delete*	Fast Acid Violet BR	Fran
1211		*delete*	CI Acid Violet 44	
1214	CI Acid Violet 49	*delete*	Milling Violet 5B	Fran
1224	CI Acid Violet 72	*delete*	Milling Violet S2B	Fran
1230	CI Acid Blue 4	*delete*	Acid Navy Blue S	Fran
1232	CI Acid Blue 7	*delete*	Brilliant Milling Blue AS	Fran
		delete	Vulcafixe Blue 3B	Fran
1236	CI Acid Blue 15	*delete*	Brilliant Milling Blue BN	Fran
1237	CI Acid Blue 18	*delete*	Wool Fast Cyanine B	Fran
1238	CI Acid Blue 20	*delete*	Induline J	Fran
1239	CI Acid Blue 22	*add*	Soluble Blue C4B	Fran
		add	*Ammonium salt*	
			Ink Blue 7BSN	Fran
1240	CI Acid Blue 25	*delete*	Acid Alizarine Saphirol J	Fran
		delete	Acid Alizarine Sapphire J	Fran
			(*see A & A*, p 4558)	
1249	CI Acid Blue 45	*add*	Acid Alizarine Sapphire B	Fran

Page	Colour Index Designation			
1250	CI Acid Blue 48	*delete*	Soluble Blue 8B, C4B, C6B	Fran
1256	CI Acid Blue 59	*add*	Savinyl Blue B	S
1257	CI Acid Blue 62	*add*	Brilliant Alizarine Cyanine R	Fran
1267	CI Acid Blue 83	*add*	Coriacid Blue 2R	Fran
		delete	CI Acid Blue 84	
1268	CI Acid Blue 85	*delete*	Neutral Blue N	Fran
1269	CI Acid Blue 89	*delete*	Wool Fast Blue B	Fran
1274		*delete*	CI Acid Blue 101	
1278	CI Acid Blue 109	*delete*	Brilliant Acid Blue JR	Fran
	CI Acid Blue 110	*delete*	Alkali Blue 4B, 6B, R	Fran
1294		*delete*	CI Acid Blue 149	
1297	CI Acid Blue 155	*delete*	Inochrome Blue J	Fran
1299	CI Acid Blue 158	*add*	Super Fast Blue GGNS	TAC
1299	CI Acid Blue 158A	*add*	Inoderme Blue 2J	Fran
1300	CI Acid Blue 161	*delete*	Inochrome Blue B	Fran
1301	CI Acid Blue 163	*delete*	Inochrome Blue JR	Fran
1307	CI Acid Green 1	*add*	Amacid Green N	AAP
1310	CI Acid Green 7	*delete*	Brilliant Acid Green A	Fran
1312	CI Acid Green 12	*add*	Inoderme Green B	Fran
		add	Supracid Green BL	Fran
1314	CI Acid Green 16	*add*	*Ammonium salt*	
			Ink Green JSN	Fran
1316	CI Acid Green 20	*delete*	Wool Green Black J	Fran
1320		*delete*	CI Acid Green 29	
		delete	CI Acid Green 30	
		delete	CI Acid Green 31	
1321		*delete*	CI Acid Green 32	
	CI Acid Green 33	*delete*	Setolane Neutral Green J	Fran
1324	CI Acid Green 40	for	Dermafast Green BL	S
		read	Derma Light Green BL	S
1328	CI Acid Green 50	*delete*	Acid Green SS	Fran
1329	CI Acid Brown 2	*add*	Supracid Brown R	Fran
1340	CI Acid Brown 28	for	Dermafast Brown RL	S
		read	Derma Light Brown RL	S
1341	CI Acid Brown 30	for	Dermafast Brown 3RL	S
		read	Derma Light Brown 3RL	S
1343		*delete*	CI Acid Brown 35	
1358		*delete*	CI Acid Brown 111	
1364	CI Acid Brown 143	*add*	Inoderme Dark Brown 2R	Fran
1376	CI Acid Black 2	*delete*	Nigrosine B powder	Fran
		delete	Nigrosine CNNS	Fran
1377	CI Acid Black 4	*delete*	Felt Black B	Fran
	CI Acid Black 5	*delete*	Acid Black L	Fran
		delete	CI Acid Black 6	
1379		*delete*	CI Acid Black 11	
1381	CI Acid Black 16	*delete*	Acid Black 2JL	Fran
	CI Acid Black 17	*delete*	Naphthalene Black 12R	Fran
1383		*delete*	CI Acid Black 22	
1385	CI Acid Black 26	*add*	Diphenylamine Black AB	Fran

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1386	CI Acid Black 28	*delete*	Naphthalene Black 12BR	Fran
1387	CI Acid Black 31	*add*	Supracid Black R	Fran
1389		*delete*	CI Acid Black 37	
1390	CI Acid Black 41	*add*	Naphthalene Reserve Black 12B	Fran
1395	CI Acid Black 52	for	Inochrome Black B	Fran
		read	Inochrome Black BNI extra	Fran
		add	Inoderme Grey B	Fran
1396	CI Acid Black 54	*delete*	Inochrome Grey 2J (*see A & A* p 4559)	Fran
1397		*delete*	CI Acid Black 57	
1399	CI Acid Black 63	*add*	Neutrichrome Black RL	Fran
1407	CI Mordant Yellow 1	*delete*	Chrome Yellow R2J	Fran
		delete	Tertrochrome Yellow 2G	CT
1409	CI Mordant Yellow 5	*add*	Chrome Fast Flavine J	Fran
1411	CI Mordant Yellow 10	*delete*	Mordant Yellow 2J	Fran
		add	Tertrochrome Yellow R	CT
1416	CI Mordant Yellow 21	*delete*	Chrome Fast Yellow R extra	Fran
1419	CI Mordant Yellow 26	*add*	Chromine Yellow R	Fran
1421	CI Mordant Yellow 30	*add*	Chrome Fast Yellow J2RL	Fran
1423	CI Mordant Yellow 34	*delete*	Tertrochrome Yellow R	CT
1430		*delete*	CI Mordant Yellow 52	
		delete	CI Mordant Yellow 53	
1431		*delete*	CI Mordant Yellow 56	
1442		*delete*	CI Mordant Orange 20	
1444		*delete*	CI Mordant Orange 25	
1451	CI Mordant Red 2	*delete*	Alizarine A	Fran
1452	CI Mordant Red 4	*delete*	Alizarine F	Fran
		delete	Alizarine Purpurine N	Fran
1453	CI Mordant Red 5	for	Chrome Fast Bordeaux R	Fran
		read	Chrome Fast Bordeaux JR	Fran
1454	CI Mordant Red 8	*delete*	Milling Red JB	Fran
1456	CI Mordant Red 11	for	Alizarine Red 3B	Fran
		read	Alizarine 3B	Fran
1475	CI Mordant Red 59	*delete*	Chrome Grenadine J	Fran
1483	CI Mordant Violet 5	*add*	Chrome Violet R	Fran
1488	CI Mordant Violet 16	*add*	Chrome Brilliant Violet ECR	Fran
1495	CI Mordant Violet 34	*delete*	Chrome Brilliant Violet ECR	Fran
		delete	Chromine Brilliant Violet ECR	Fran
1498	CI Mordant Violet 44	*delete*	Chrome Fast Violet RL	Fran
		delete	CI Mordant Violet 45	
1500	CI Mordant Violet 50	*delete*	Ultra Violet MO	S
1503	CI Mordant Blue 1	*add*	Chrome Sky Blue B	Fran
1505	CI Mordant Blue 6	*delete*	Chrome Blue F	Fran
1514	CI Mordant Blue 27	*delete*	Alizarine Blue S	Fran
1515	CI Mordant Blue 29	*add*	Chromine Sky Blue S	Fran
1527		*delete*	CI Mordant Blue 61	
1528		*delete*	CI Mordant Blue 64	
1536	CI Mordant Green 16	*delete*	Chromaven Green G	AAP
1543	CI Mordant Green 32	*delete*	Chrome Green J	Fran
1556	CI Mordant Brown 13	*delete*	Omega Chrome Brown W	S
1557	CI Mordant Brown 15	*add*	Chrome Fast Brown REN	Fran
1562		*delete*	CI Mordant Brown 28	
1565	CI Mordant Brown 33	*add*	Chrome Fast Brown 2R	Fran
		add	Dermachrome Brown 2R	Fran
1569	CI Mordant Brown 42	*add*	Anthracene Brown N	Fran
1576	CI Mordant Brown 60	*delete*	Chrome Reserve Brown 4R	Fran
1579	CI Mordant Brown 69	*delete*	Dermachrome Brown CB	Fran
1580		*delete*	CI Mordant Brown 72	
1581		*delete*	CI Mordant Brown 77	
1583		*delete*	CI Mordant Brown 84	
1585	CI Mordant Black 1	for	Chrome Fast Black A	Fran
		read	Chrome Fast Black AS	Fran
1586	CI Mordant Black 3	*delete*	Chrome Blue Black B	Fran
1587	CI Mordant Black 5	*delete*	Chrome Fast Black F	Fran
1593	CI Mordant Black 17	*add*	Chrome Blue Black RF	Fran
1602	CI Mordant Black 38	*add*	Chrome Fast Grey JL	Fran
1606	CI Mordant Black 49	*delete*	Chrome Black R	Fran
1609	CI Mordant Black 56	*delete*	Chrome Black J	Fran
1611		*delete*	CI Mordant Black 63	
1620	CI Basic Yellow 3	*delete*	Auramine J	Fran

Page	Colour Index Designation			

Page	Colour Index Designation			

Page			
1495	CI Mordant Violet 34	*delete*	Chrome Brilliant Violet ECR ... Fran
		delete	Chromine Brilliant Violet ECR ... Fran
1609	CI Mordant Black 56	*delete*	Chrome Black J ... Fran
1611		*delete*	CI Mordant Black 63
1620	CI Basic Yellow 3	*delete*	Auramine J ... Fran

Page	Colour Index Designation		
1624	CI Basic Orange 7	*delete*	Sabaphosphine M ... S
1625	CI Basic Orange 10	*delete*	Brilliant Phosphine 2J ... Fran
1626	CI Basic Orange 14	*delete*	Acridine Brilliant Orange E ... Fran
	CI Basic Orange 15	*delete*	Phosphine B ... Fran
1628	CI Basic Orange 23	*delete*	Phosphine AL ... Fran
1631	CI Basic Red 8	*delete*	Rhodamine J ... Fran
	CI Basic Red 11	*delete*	Rhodamine S ... Fran
1633	CI Basic Violet 1	*delete*	Paris Violet Extra Conc A ... Fran
	CI Basic Violet 2	*delete*	New Fuchsine O ... Fran
1637	CI Basic Violet 12	*delete*	Methylene Heliotrope N ... Fran
1639	CI Basic Blue 1	for	Methylene Turquoise J ... Fran
		read	Methylene Turquoise JSA Extra ... Fran
1640	CI Basic Blue 5	*delete*	Methylene Cyanine N ... Fran
1644	CI Basic Blue 17	*delete*	Toluidine Blue N ... Fran
1645	CI Basic Blue 24	*delete*	New Methylene Blue S ... Fran
1646	CI Basic Blue 25	*delete*	Thionine Blue J ... Fran
	CI Basic Blue 26	*add*	Victoria Blue BS ... Fran
1648	CI Basic Green 4	*delete*	Malachite Green Extra Conc A ... Fran
		delete	Malachite Green J3EM (*Hydrochloride*) ... Fran
	CI Basic Green 5	*delete*	Methylene Green JZ ... Fran
1653	CI Basic Black 1	*delete*	Methylene Grey B ... Fran
		delete	Methylene Grey J ... Fran
1659	CI Disperse Yellow 1	for	Amacel Golden Yellow VIII ... AAP
		read	Amacel Yellow RR ... AAP
1660	CI Disperse Yellow 3	under	HUE
		add	Polyester Bright Yellow
		for	Artisil Direct Yellow G ... S
		read	Artisil Yellow G ... S
		for	Artisil Direct Yellow 2GN ... S
		read	Artisil Yellow 2GN ... S
		add	Esteroquinone Light Yellow 4JL ... Fran
1662	CI Disperse Yellow 8	for	Artisil Direct Yellow GN ... S
		read	Artisil Yellow GN ... S
		add	Acetoquinone Light Yellow 2JLZ ... Fran
1664	CI Disperse Yellow 12	for	Artisil Direct Yellow 5GN ... S
		read	Artisil Yellow 5GN ... S
1667	CI Disperse Yellow 19	for	Artisil Direct Yellow 5GP ... S
		read	Artisil Yellow 5GP ... S
1668	CI Disperse Yellow 23 in the heading	*add*	CI 26070
		under	HUE
		add	Polyester Yellowish Orange
		add	Acetoquinone Light Yellow 3RLLZ ... Fran
1668 (continued)		*add*	Artisil Yellow RGFL ... S
		add	Esteroquinone Light Yellow 3RLL Fran
		add	Foron Yellow RGFL ultra-dispersed S
		add	Nyloquinone Yellow 3R ... Fran
1670	CI Disperse Yellow 28	for	Amacel Golden Yellow IX ... AAP
		read	Amacel Yellow GNR ... AAP
		delete	CI Disperse Yellow 29
		delete	CI Disperse Yellow 30
1674	CI Disperse Yellow 37	*add*	Amacron Yellow LS ... AAP
1677	CI Disperse Orange 2	*add*	Amacel Golden Yellow FSI ... AAP
1678	CI Disperse Orange 3	for	Artisil Direct Orange 2R ... S
		read	Artisil Orange 2R ... S
		for	Artisil Direct Orange 2RP ... S
		read	Artisil Orange 2RP ... S
	CI Disperse Orange 4	for	Acetazol Orange R ... Fran
		read	Acetazol Orange RZ ... Fran
1679	CI Disperse Orange 5	for	Artisil Direct Brown H ... S
		read	Artisil Brown H ... S
		add	Amacron Orange LS ... AAP
1680	CI Disperse Orange 8	for	Artisil Direct Orange 4RP ... S
		read	Artisil Orange 4RP ... S
1682	CI Disperse Orange 11	for	Artisil Direct Orange 3RP ... S
		read	Artisil Orange 3RP ... S
		add	Acetoquinone Light Orange JL ... Fran
		add	Nyloquinone Orange JR ... Fran
1684	CI Disperse Orange 15	for	Amacel Golden Orange III ... AAP
		read	Amacel Golden Orange 3G ... AAP
1685	CI Disperse Orange 17	*add*	Amacron Orange GLS ... AAP
	CI Disperse Orange 18	*add*	Esteroquinone Light Brown JR ... Fran
1686	CI Disperse Orange 20	for	Artisil Direct Orange GFL ... S
		read	Artisil Orange GFL ... S
		add	Foron Orange GFL ultra-dispersed S
	CI Disperse Orange 21	for	Artisil Direct Orange RFL ... S
		read	Artisil Orange RFL ... S
		add	Foron Orange RFL ultra-dispersed S
1687	CI Disperse Red 1	*add*	Acetoquinone Light Scarlet BLZ Fran
		add	Nyloquinone Red N ... Fran

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1687	CI Disperse Red 2	for	Artisil Direct Scarlet GP	S
		read	Artisil Scarlet GP	S
1688	CI Disperse Red 4	under	HUE	
		add	Polyester Bluish Pink	
		add	Acetoquinone Light Pink RLZ	Fran
		add	Esteroquinone Light Pink RLL	Fran
		add	Nyloquinone Pink B	Fran
1689	CI Disperse Red 5	for	Amacel Rubine IX	AAP
		read	Amacel Rubine 3B	AAP
		for	Artisil Direct Rubine R	S
		read	Artisil Rubine R	S
1690	CI Disperse Red 7	under	HUE	
		add	Polyester Bright Reddish Orange	
		add	Acetoquinone Light Scarlet JRZ	Fran
		add	Esteroquinone Scarlet JR	Fran
		add	Nyloquinone Red J	Fran
		for	Amacel Scarlet III	AAP
		read	Amacel Scarlet 3G	AAP
1691	CI Disperse Red 9	for	Amacel Red VI-X	AAP
		read	Amacel Fast Pink G	AAP
1693	CI Disperse Red 13	*add*	Acetoquinone Light Rubine BLZ	Fran
		add	Nyloquinone Bordeaux B	Fran
1694	CI Disperse Red 15	for	Acetoquinone Light Rose RL	Fran
		read	Acetoquinone Light Gooseberry RL	Fran
		for	Amacel Red VII	AAP
		read	Amacel Pink B	AAP
		for	Artisil Direct Red 3BP	S
		read	Artisil Red 3BP	S
1695	CI Disperse Red 17	for	Amacel Red VIII	AAP
		read	Amacel Red GG	AAP
		add	Acetoquinone Light Red BZ	Fran
		add	Nyloquinone Red BN	Fran
1698	CI Disperse Red 24	for	Artisil Direct Red BP	S
		read	Artisil Red BP	S
		for	Artisil Direct Red BPS	S
		read	Artisil Red BPS	S
1700	CI Disperse Red 30 under "The following brand is similar"	for	Artisil Direct Red B	S
		read	Artisil Red B	S
	CI Disperse Red 31	*delete*	Nyloquinone Red B	Fran
1702		*delete*	CI Disperse Red 37	
1703		*delete*	CI Disperse Red 42	
1705	CI Disperse Violet 1	for	Amacel Heliotrope I	AAP
		read	Amacel Heliotrope R	AAP
		for	Artisil Direct Violet 2RP	S
		read	Artisil Violet 2RP	S
		add	Nyloquinone Violet R	Fran

Page	Colour Index Designation			
1706	CI Disperse Violet 4	for	Amacel Violet II	AAP
		read	Amacel Violet 6B	AAP
	under "The following brands are similar"	for	Artisil Direct Violet BP	S
		read	Artisil Violet BP	S
1713	CI Disperse Blue 1	for	Artisil Direct Blue SAP	S
		read	Artisil Blue SAP	S
	under "The following brands are similar"	*delete*	Acetoquinone Blue 2R	Fran
1714	CI Disperse Blue 3	for	Artisil Direct Blue BSQ	S
		read	Artisil Blue BSQ	S
		add	Acetoquinone Light Pure Blue R	Fran
1716	CI Disperse Blue 7	under	HUE	
		add	Polyester Bright Greenish Blue	
		for	Artisil Direct Blue Green GP	S
		read	Artisil Blue Green GP	S
		add	Esteroquinone Light Blue 4JL	Fran
		delete	Amacel Green Blue II	AAP
		add	Amacel Green Blue B, G	AAP
1719	CI Disperse Blue 14	for	Artisil Direct Blue BRP	S
		read	Artisil Blue BRP	S
1720	CI Disperse Blue 16	for	Artisil Direct Blue 4GP	S
		read	Artisil Blue 4GP	S
	CI Disperse Blue 17	for	Artisil Direct Blue 5G	S
		read	Artisil Blue 5G	S
1721	CI Disperse Blue 18	for	Artisil Direct Blue BP	S
		read	Artisil Blue BP	S
	CI Disperse Blue 19	for	Artisil Direct Blue 2RP	S
		read	Artisil Blue 2RP	S
1722	CI Disperse Blue 20	for	Artisil Direct Blue GFL	S
		read	Artisil Blue GFL	S
		add	Foron Blue GFL ultra-dispersed	S
1726	CI Disperse Blue 29	for	Artisil Direct Navy BNP	S
		read	Artisil Navy BNP	S
1730	under Disperse Navy Mixtures	for	Artisil Direct Navy BNS	S
		read	Artisil Navy BNS	S
		for	Artisil Direct Navy BR	S
		read	Artisil Navy BR	S
1732	under Disperse Green Mixtures	for	Artisil Direct Green BLP	S
		read	Artisil Green BLP	S
1733	under Disperse Brown Mixtures	*delete*	Acetoquinone Brown BT	Fran
		for	Artisil Direct Brown BP	S
		read	Artisil Brown BP	S
		for	Artisil Direct Brown BT	S
		read	Artisil Brown BT	S

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1733 (continued)		for	Artisil Direct Brown ENZ	S

Page		
2236	Phthalocyanine	CI Direct Blue 1

read	Amacel Heliotrope R		AAP
for	Artisil Direct Violet 2RP		S
read	Artisil Violet 2RP		S
add	Nyloquinone Violet R		Fran

for	Artisil Direct Brown BP		S
read	Artisil Brown BP		S
for	Artisil Direct Brown BT		S
read	Artisil Brown BT		S

Page	*Colour Index Designation*			
1733 (continued)		for	Artisil Direct Brown ENZ	S
		read	Artisil Brown ENZ	S
		for	Artisil Direct Brown GP	S
		read	Artisil Brown GP	S
		for	Artisil Direct Brown RLN	S
		read	Artisil Brown RLN	S
1735	CI Disperse Black 1	under	Hue	
		add	Polyester Bluish Black	
		add	Esteroquinone Diazo Black N	Fran
	CI Disperse Black 2	*add*	Acetoquinone Diazo Navy 2BZ	Fran
		add	Nyloquinone Diazo Navy 2B	Fran
1737	CI Disperse Black 7	for	Amacel Black IV	AAP
		read	Amacel Black 4S	AAP
1738	CI Disperse Black 9	*add*	Amacel Black JRW	AAP
1739	CI Disperse Black 12	under	Hue	
		add	Polyester Black (after diazotization)	
		add	Esterazol Light Black BL, BLHT	Fran
		add	Selected brands are suitable for high-temperature dyeing	
	CI Disperse Black 13	for	Artisil Direct Black BTN	S
		read	Artisil Black BTN	S
1741	under Disperse Grey Mixtures	for	Artisil Direct Grey BLP	S
		read	Artisil Grey BLP	S
		for	Artisil Direct Grey BNP	S
		read	Artisil Grey BNP	S
		for	Artisil Direct Grey BNP New	S
		read	Artisil Grey BNP New	S
1742	under Disperse Black Mixtures	for	Artisil Direct Black BKZ	S
		read	Artisil Black BKZ	S
		for	Artisil Direct Black GSP	S
		read	Artisil Black GSP	S
		delete	Acetoquinone Black BI	Fran

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Additional *Colour Index* Designations and Numbers

Page		
2142	Monoazo	CI Direct Red 193
	Hue Bright Red Chlorazol Diazo Red 4B	ICI

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2236	Disazo	CI Direct Blue 188
	Hue Bright Blue Durazol Blue R	ICI

Page		
2236	Phthalocyanine	CI Direct Blue 16
	Hue Bright Greenish Blue Durazol Turquoise Blue GR	ICI

Page		
2359	Stilbene	CI Direct Black 102
	Hue Brownish Grey Durazol Olive G	ICI

Page		
2441	Anthraquinone	CI Vat Yellow 33
	Hue Bright Yellow Caledon Yellow 4GL	ICI
	Anthraquinone	CI Solubilized Vat Yellow 34
	Hue Bright Yellowish Orange Soledon Yellow 3R	ICI

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2477		CI Vat Red 49
	Hue Bluish Red Sandothrene Copper Red F-NR	S

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2489	Anthraquinone	CI Vat Violet 20
	Hue Dull Bordeaux Caledon Rubine B	ICI

Page		
2517	Anthraquinone	CI Vat Blue 52
	Hue Bright Reddish Blue Caledon Blue 3RC	ICI

Page		
2530	Anthraquinone	CI Vat Green 26
	Hue Olive Caledon Olive OMW	ICI

Page		
2530	Anthraquinone	CI Vat Green 27
	Hue Dull Brownish Olive Caledon Olive RMW	ICI

Page		
2563	Anthraquinone	CI Vat Black 34
	Caledon Direct Black AC	ICI

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2567	Phthalocyanine	CI Ingrain Blue 3
		Hue Bright Greenish Blue
		Alcian Blue 7GX ICI

Page		
2567	Phthalocyanine	CI Ingrain Blue 4
		Hue Bright Blue
		Alcian Blue 2GX ICI

Page		
2612	CI 37245	CI Azoic Diazo Component 109
		Brentamine Fast Black B ICI
		Fast Black B Base Acna
		Fast Black B Salt Acna

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2655	CI Azoic Red 67
	Hue Bright Red
	Brentacet Red B ICI
	CI Azoic Red 68
	Hue Bright Yellowish Red
	Brentacet Scarlet G ICI

Page	
2666	CI Azoic Blue 28
	Hue Bright Blue
	Brentacet Blue B ICI

Page		
2678		CI Azoic Black 9
		Brentacet Black B ICI
2717	CI 11765 Monoazo	CI Pigment Yellow 49
		Hue Bright Yellow
		Monolite Fast Yellow CV ICI
	Monoazo (Calcium lake)	CI Pigment Yellow 50
		Hue Bright Reddish Yellow
		Polymon Yellow R ICI
	Disazo	CI Pigment Yellow 51
		Hue Bright Reddish Yellow
		Vulcafor Fast Yellow R ICI

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2762	Disazo	CI Pigment Red 110
		Hue Bright Yellowish Red
		Vulcafor Fast Red Y ICI

Page		
2762	Disazo	CI Pigment Red 111
		Hue Bright Red
		Vulcafor Fast Scarlet G ICI

Page	
2929	CI Developer 18
	Hue Dull Reddish Brown
	Brentosyn RB ICI
	CI Developer 19
	CONSTITUTION Phloroglucinol (1,3,5-benzenetriol)
	Hydroxanil G, P, 2R Mahr
	Literature
	USP 2546861

Amendments

Page	*Colour Index Designation*		
2054	CI Direct Orange 46	*add*	Tertrodirect Fast Orange 7GL CT
2068		*delete*	CI Direct Orange 86
2105	CI Direct Red 83	*add*	Amanil Supra Rubine BBL AAP
2109	CI Direct Red 95	*add*	Solar Scarlet RL S
2124		*delete*	CI Direct Red 136
2179	CI Direct Blue 22	*delete*	Chloramine Sky Blue RF S
2211		*delete*	CI Direct Blue 117
2283	CI Direct Brown 51	*delete*	Tertrodirect Bronze G CT
	CI Direct Brown 52	*add*	Tertrodirect Bronze G CT
2295	CI Direct Brown 95	*add*	Amanil Supra Brown LBL AAP
2345		*delete*	CI Direct Black 60
2413	CI Sulfur Black 1	*delete*	Sulphur Black 911 extra conc new, 911 super conc HDP
		add	Sulphur Black HD Grains 125 HDP
		add	Sulphur Black Liquid LRS HDP
	CI Solubilized Sulfur Black 1	for *read*	Sulphur Black 755 Liquid HDP
			Sulphur Black Liquid LSC HDP
2427	CI Vat Yellow 1	*delete*	Amanthrene Yellow G AAP
2452	CI Vat Orange 15	*add*	Amanthrene Golden Orange 3G AAP
2460	CI Vat Red 10	*add*	Amanthrene Red FBB AAP
2495	CI Vat Blue 5	*delete*	Amindigo Blue 2BD AAP
2543	CI Vat Brown 31	*add*	Amanthrene Red Brown AAP

	Disazo	CI Pigment Yellow 51
	Hue Bright Reddish Yellow	
	Vulcafor Fast Yellow R	ICI

Page	*Colour Index Designation*		
2427	CI Vat Yellow 1	*delete*	Amanthrene Yellow G AAP
2452	CI Vat Orange 15	*add*	Amanthrene Golden Orange 3G AAP
2460	CI Vat Red 10	*add*	Amanthrene Red FBB AAP
2495	CI Vat Blue 5	*delete*	Amindigo Blue 2BD AAP
2543	CI Vat Brown 31	*add*	Amanthrene Red Brown AAP

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2546	in the heading beneath		CI Vat Brown 38
		add	CI Solubilized Vat Brown 38
		under	CI Solubilized Vat Brown 38
		add	Soledon Dark Brown 6R ICI
2588	CI Azoic Diazo Component 25	*add*	Diazo Fast Red SW RL
2609	CI Azoic Diazo Component 49	*add*	Fast Orange RD Salt AAP
2616	CI Azoic Coupling Component 10	*add*	Amanil Naphthol AS-E AAP
2617	CI Azoic Coupling Component 13	*add*	Amanil Naphthol AS-SG AAP
	CI Azoic Coupling Component 14	*add*	Amanil Naphthol AS-PH AAP
2620	CI Azoic Coupling Component 25	*add*	Amanil Naphthol AS-SR AAP
2622	CI Azoic Coupling Component 34	*add*	Amanil Naphthol AS-EL AAP
2623	CI Azoic Coupling Component 35	*add*	Amanil Naphthol AS-LG AAP
2670	CI Azoic Brown 7	*add*	Sandogen Brown F-BL S
2683	CI Oxidation Base 2B	*delete*	Fouramine BO Fran
2686	CI Oxidation Base 8	*delete*	Fouramine SL Fran
	CI Oxidation Base 8B	*delete*	Fouramine ALO Fran
2687	CI Oxidation Base 10	*delete*	Fouramine DR Fran
	CI Oxidation Base 10A	*delete*	Fouramine CD Fran
2688	CI Oxidation Base 12	*delete*	Fouramine DA Fran
	CI Oxidation Base 13A	*delete*	Fouramine SO Fran
2689	CI Oxidation Base 14	*delete*	Fouramine DP Fran
	CI Oxidation Base 15	*delete*	Fouramine ON Fran
2690	CI Oxidation Base 19	*delete*	Fouramine U Fran
2745	CI Pigment Red 57	*delete*	Segnale Rubine BKG Acna (*See A&A List No. 2*)
		under	"Barium lake"
		add	Segnale Rubine BKC Acna
2753	CI Pigment Red 81	for	Phosphotungstomolybdic acid lake of CI Basic Red 3*
		read	Phosphotungstomolybdic acid lake of CI Basic Red 1*

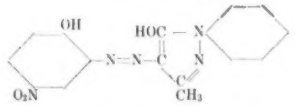
Page	*Colour Index Designation*		
2823	CI Solvent Yellow 19	*add*	Savinyl Yellow GRL S
2832	CI Solvent Yellow 48	*add*	Savinyl Yellow 3GS S
2834	CI Solvent Orange 5	*add*	Savinyl Orange GRL S
2845	CI Solvent Red 7	*add*	Savinyl Red 2BLS S
2900	CI Solvent Black 6	*add*	Savinyl Black BN S
2911	CI Fluorescent Brightening Agent 15	*add*	Photine C HDP

VOLUME 3

Additions and Amendments

Page	*Colour Index No.*
3036	*add*

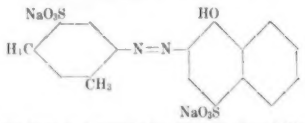
12714 CI Acid Orange 92 (new entry) (*Reddish Orange*)
A chromium complex of



2-Amino-4-nitrophenol → 3-Methyl-1-phenyl-5-pyrazolone
then convert to the chromium complex

3057 for 14240 CI Acid Yellow T/301
read 14240★ Acid Dye
under 14251 CI Acid Brown 42
for Treat CI 11920 with chromium formate
read Treat CI 14250 with chromium formate

3061 14700 CI Food Red 1
the constitution for this item should read—

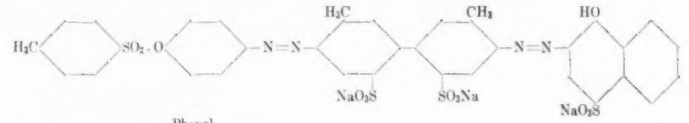


5-Amino-2,4-xylenesulfonic acid → Nevile and Winther's acid

3108 under 18690 CI Solvent Yellow 21 (*Yellow*)
add CI Acid Yellow 121 (new entry) (*Reddish Yellow*)

3180 *add*

23905 CI Acid Red 145 (*Bright Yellowish Red*)



6,6'-Disulfo-o-Tolidine → Phenol, Nevile and Winther's acid

then esterify the phenolic hydroxy group with p-toluenesulfonyl chloride

Page	*Colour Index No.*
3206	for 26070★ Disperse Dye (*Reddish Yellow*) *read* 26070 CI Disperse Yellow 23 (*Reddish Yellow*)
3298	for 34906★ Acid Dye *read* 34906 CI Acid Brown 216
3325	for 37245★ Azoic Diazo Component *read* 37245 CI Azoic Diazo Component 109

CORRECTION

THE *Colour Index* Additions and Amendments Number 3 in the May 4, 1959, issue of *American Dyestuff Reporter*, pages 46-55, should be corrected as follows:

Page	*Item*	
49	2170	Change Calcomine Diazo Black BHDG ..... CCC to Calcomine Diazo Black BHGD CCC
54	3447	Under the structure "Residue from manufacturer" should read "manufacture"

VOLUME 4

Amendments

Page			
4001	The entry for AAP should read—	AAP	Koppers Company, Inc, Chemicals and Dyestuffs Div, Pittsburgh 19, Pa. (Formerly American Aniline Products, Inc.)
4004	*add*	*TAC*	Textile Aniline and Chemical Co, 49 Blanchard Street, Lawrence, Mass, USA.
4005	*delete*		American Aniline Products Inc, New York, NY, USA. A unit of Koppers Co Inc, Pittsburgh, Pa, USA (AAP) See the new entry for Koppers Company, Inc.
4007	*add*		Koppers Company, Inc, Chemicals and Dyestuffs Div, Pittsburgh 19, Pa. Formerly American Aniline Products, Inc (AAP).
4008	*add*		Textile Aniline and Chemical Co, 49 Blanchard Street, Lawrence, Mass, USA (TAC).

4265 and 4266

The range of FD&C dyes are out of alphabetical order and should appear after FD Caledon on page 4278

4439 *add* Soledon Scarlet B ..... ICI CI Solubilized Vat Dye (Mixture of Soledon Pink FF and Soledon Orange R)

Proceedings of the

American Association of Textile Chemists and Colorists

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August 10, 1959

JOINT TECHNICAL MEETING AATCC – CATCC*

PANEL

CHARLES A SYLVESTER, *chairman, AATCC Technical Committee on Research*	LOUIS J SHEPS *moderator*	WELDON G HELMUS *AATCC president*
Topic	*Representing AATCC*	*Representing CATCC*
Wash and Wear	GRAHAM B RICHARDSON	CARL R TEICHGRABER
Colorfastness to Light	JOSEPH E NORTON	REGINALD W REDSTON
Colorfastness to Washing	RALPH B SMITH	ARNE GREYBORN
Chlorine Retention	RICHARD F AURICH	STANLEY H CHAMBERS
Consumer Complaints	ALBERT E JOHNSON	F DONALD WALLACE
Dimensional Changes	JOHN F WARNER	ARTHUR R TREMAINE

At the invitation of the Quebec Section, Canadian Association of Textile Colourists and Chemists, the American Association of Textile Chemists and Colorists held the 215th Meeting of the Council in Montreal, Canada. Following the Council meeting, Charles A Sylvester, chairman of AATCC'S Technical Committee on Research, and the chairmen of six sub-committees of TCR participated in a panel discussion with six representatives of the Quebec Section. L J Sheps of CATCC served as moderator. The texts of the papers presented by the AATCC participants as well as the remarks by AATCC President Weldon G Helmus are presented here. The Canadian representatives did not deliver prepared papers, but participated in the question-and-answer period which followed the presentatons.

AATCC Looks Ahead

C A SYLVESTER

E I duPont de Nemours & Co, Inc

Chairman, Technical Committee on Research, AATCC

MR CHAIRMAN, members of the Quebec Section, Canadian Association of Textile Colourists and Chemists, the American Association of Textile Chemists and Colorists, and honored guests, it is a welcome privilege to be able to participate in your program this afternoon and talk to you about AATCC research. I would like to preface my remarks by saying that I am sure my comments about AATCC apply equally well to your own progressive Association. Too often we tend to take a good thing for granted, and AATCC is a good thing. Its test methods are an integral part of the textile industry. Sometimes I wonder if we really appreciate the fact that practically all of the dyes, finishes and many chemicals produced in the United States are controlled and checked by the use of AATCC test methods. And these same AATCC test methods are a major factor in insuring the satisfactory consumer performance of the billions of yards of textiles that find their way across the retail counter and into the hands of Mr and Mrs United States.

AATCC's unchallenged position in the United States as the authority in the field of developing test methods for evaluating colorfastness is well merited. However, the scope of its activities has continued to broaden. Its 40 active research committees reporting to the Technical Committee on Research include among their projects such subjects as: dermatitis, fabric odor, ozone fading, stream sanitation, consumer complaint data, etc.

A new committee of the Council has been formed recently, on the Executive Committee on Research's recommendation, to study AATCC's long-range objectives.

During the past two years we have had a gradual reorganization at National Headquarters. Significant changes have taken place in an all-out effort to reinforce the effectiveness of both research and technical programs. This reorganization has been a major factor in helping to coordinate and implement our research activities.

We spent approximately $60,000 on research last year. At today's dollar value, I would consider that a con-

* Held May 29, 1959 at the Sheraton-Mt Royal Hotel, Montreal, Canada.

servative sum. Looking ahead, let us take a high-spot review of what we are doing.

Special emphasis is being placed on ways and means to improve our research program. Added stress is being placed on the development of end-use performance tests. In an effort to provide our research committees with the most effective and modern working tools, an advisory committee on the use of statistics in developing test methods has been established.

We are broadening our cooperative efforts with other associations and professional societies. Among the organizations where a close-working relationship exists are: American Society for Testing Materials, American Standards Association, National Fire Protection Society, National Retail Dry Goods Association, Textile Research Institute, and agencies and departments of the Federal Government. We are concerned with many problems arising between the United States textile industry and that of other countries. We are in touch with the Society of Dyers and Colourists, the Canadian Association of Textile Colourists and Chemists, and the International Organization for Standardization (ISO). Recently, a policy committee on international test methods was formed to give closer scrutiny to our relationship with international activities. We believe that this is important, not only to protect American interests, but also to join in the give and take of international negotiation as a means of exchanging ideas and technical knowledge.

Now, to give some indication of our forecast activity in 1959/1960, let us briefly review the plans of a few of our committees, six of which are reporting here this afternoon.

Committee on Drycleaning Test Methods. This committee has under consideration a modification of the colorfastness test that will greatly improve its correlation with actual drycleaning. The Committee will also shortly propose a new test for shrinkage in steam pressing.

Committee on Evaluation of Finishes for Resistance to Staining and Soiling. This Committee has two task groups working on two specific problems. One is concerned with the problem of soil disposition through laundering. The other is primarily concerned with oil-borne stains. Available test methods have been evaluated on an interlaboratory basis; data obtained have not yet been compiled.

Committee on Evaluation of Fulling Agents. A small laboratory fulling mill has been designed, which appears capable of measuring the fulling potentialities of various chemical agents in respect to the rate of fulling, the various factors affecting quality and hand of the end product, and the ability of these materials to remove the oils often present in fabrics to be fulled.

Committee on Water Resistance of Fabrics. Two projects involving interlaboratory tests on laundered and unlaundered fabrics are in progress: 1) to determine correlation between results obtained using the six-liter tumble jar and those using the stainless-steel containers in the Launder-Ometer, and 2) to study the properties of different blotters from different manufacturers to establish the importance of absorbency and other properties on test results obtained with the Dynamic Absorption Test. The AATCC Rain Test is being written in appropriate ISO Document form for submission to ISO for comment.

Committee on Flammability of Textiles. This Committee is carrying on extensive interlaboratory studies in the fields of 1) flame intensity; 2) variations within individual samples, especially low-napped goods; and 3) use of so-called tag board holders to replace multiple specimen frames.

You will note from the high-spot picture I have endeavored to present and from the more detailed reports of the individual committees represented on the panel today that AATCC is gearing its research to the times and looking ahead. I am sure that your Association is doing the same.

In closing, I would like to pay tribute to the hundreds of experts serving on AATCC and CATCC Research Committees, whose talents and time represent an astronomical investment. These men and women are volunteering their services and contributing their knowledge to the welfare of our respective Associations. It is this type of cooperative effort that permeates both of our Associations and insures their continued record of progress and achievement.

"Wash and Wear"—A Progress Report

GRAHAM M RICHARDSON

E I duPont de Nemours & Co, Inc
Chairman, AATCC Committee on Wash and Wear

IT is a pleasure for me to speak at this joint technical session. We were flattered to hear that the Canadian Association had picked a moderator and six Canadians to assist the six Americans with the question-and-answer period. It's too bad for us Americans that the American dollar can't enjoy the same relative equality.

My purpose today is to tell you about the work of the AATCC Wash and Wear Committee. It is hoped that you will learn from our mistakes and be guided by our successful experiences.

The concept of "wash and wear" is not new. For instance, here is a celluloid collar like those worn in 1900, an item strictly "wash and wear" by today's standards. There was no problem of poor colorfastness or of chlorine retention, but this collar did eventually turn yellow or crack and was discarded. Nylon tricot lingerie, which came into being about 1939, is a good example of "wash and wear" of twenty years ago, and it still meets today's requirements. Cotton knitwear is another case in point.

Well, if "wash and wear" isn't new, then why all the fuss about it today? The answer lies in the fact that it was not recognized until recently that "wash and wear" was such a powerful merchandising tool. It promises to free the housewife from the laborious task of ironing.

When one thinks of "wash and wear," it is usual to visualize garments that are completely wrinkle free with sharp creases and no seam puckering. However, as one buys garments and wears them, the wife starts to really enjoy the freedom from ironing. To fully realize this freedom, there results a downward adjustment to more practical standards

Figure 1

Figure 2

Figure 3

of appearance. An old wag has said that we may eventually look like a nation of hoboes through the "wash and wear" route unless better test procedures and standards are introduced and enforced. There is a very wide divergence of opinion as to what level of appearance is needed for garments to be classed as "wash and wear." This is readily understandable when one considers the variety of end uses and the differences that exist in personal opinions. If one is thinking of an outer garment that is completely exposed to view, very high standards are required. On the other hand, for lingerie and underwear, one would be less demanding since these undergarments cannot or should not be seen and are therefore less important to one's appearance. Between these two extremes lie many garments requiring better appearance in some cases and less in others.

Aside from the standards one sets for a garment's appearance, based on whether it is an outergarment or an undergarment, there is the personal factor, which causes one person to say the garment is satisfactory for "wash and wear" while another person will say it is not satisfactory. This personal factor varies widely among people and even varies for an individual. When one shows a fabric or garment and asks, "Is this suitable for your personal 'wash and wear' wardrobe," he must qualify the question. If it is a shirt, he should state to what occasion one might consider wearing it, such as to church, a sports event or at home for leisure. The individual passing judgment on a garment will vary his opinion of it depending on what particular function he has just attended or anticipates attending.

To further illustrate the wide difference in the requirements in "wash and wear" garments, let's look at Figures 1, 2 and 3.

Figure 1 shows a completely satisfactory "wash and wear" garment that has been used for centuries. There have been some general rumblings, but no sustained complaints from the same customers.

Figure 2 shows another customer satisfied with the "wash and wear" performance of his garment. He is not concerned about pleat or crease retention, seam puckering or smooth appearance of the fabric. However, one wonders whether or not the "wash" part of the "wash and wear" slogan has ever really been tested.

Now, the two examples just given are only applicable to a small segment of the market. The business man depicted in Figure 3 represents the type of growing market which is the real target of "wash and wear." The consumers in this group are neat and fussy about their appearance.

We might then agree that there are some serious problems in setting standards for the appearance of fabrics after washing and wearing. Since we are not qualified by training or vocation to set standards of performance, we must leave that function to those who merchandise garments. We in the AATCC can serve our useful purpose by providing methods of measuring fabric appearance after laundering.

When our Committee first met in 1955, it was agreed that we would undertake the development of methods for measuring the smooth appearance of fabrics after laundering. In considering test procedures, recognition was given to the basic methods of home laundering. The methods involve hand washing, machine washing, automatic tumble drying and line drying. Based on this, it was decided to have four tests in order to recog-

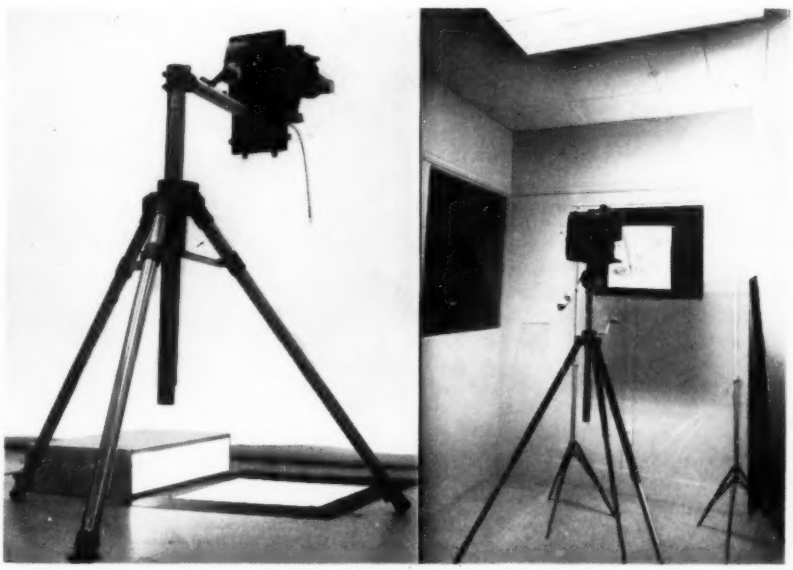


Figure 4

Two lighting arrangements for photographing fabrics (low angle lighting on left, high angle lighting on right). Fabrics having ratings of 5, 3, and 1 were selected using the tentative AATCC method.

nize all of the possible home laundry procedures. Accordingly the following tests were adopted:

1) Hand Wash—Drip dry
2) Machine Wash—Drip dry
3) Machine Wash—Tumble dry
4) Machine Wash—Line dry.

The first test is run at 105°F, but the other three may be carried out at either 105°F or 140°F at the discretion of the user, who indicates which test he used for a given sample. Fabrics showing a good rating in test 3 are merchandised as "automatic wash and wear" by some firms. A 15″ square fabric sample is used as the test specimen.

To evaluate the dried samples, it was decided to examine them in a darkened room under low angle light and compare them for appearance with five photographs of samples made under similar lighting conditions. These represent a relatively unwrinkled fabric in photograph 5 and a badly wrinkled fabric in photograph 1 with gradients in between. [Cf *Am Dyestuff Reptr 47, No.* 17, P785-80(1958)].

In the discussion of the present method, many of the details of the test have been omitted in order to use the allotted time for a discussion of future work. However, those wishing more detail may obtain a complete copy of the method by addressing their request to the AATCC, Lowell, Massachusetts and asking for AATCC Tentative Test Method 88-1958, "Wash and Wear Fabrics, Appearance after Home Laundering."

Now, after one year of use, let's discuss the method and find out how it has been received by the textile industry.

The method has filled a timely need and is used extensively. However, changes are being considered in the area of lighting and viewing of the samples. These are needed in the interest of adapting the test to the equipment generally available to those viewing "wash and wear" items.

For instance, the need for a darkened room for viewing samples limits the use of the method and has led to modifications. In addition, samples viewed under low angle light show very dark shadows. This type of lighting exaggerates the wrinkled appearance of fabrics and is not realistic with respect to what the consumer sees. Accordingly, the Wash and Wear Committee is experimenting with diffuse-type overhead lighting for viewing samples. This will permit hanging samples in a vertical position instead of laying them horizontally.

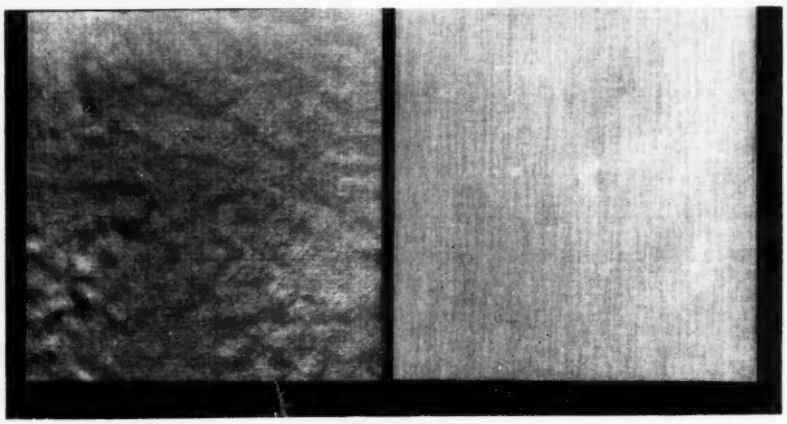


Figure 5
Photographs of fabric having a rating of 5

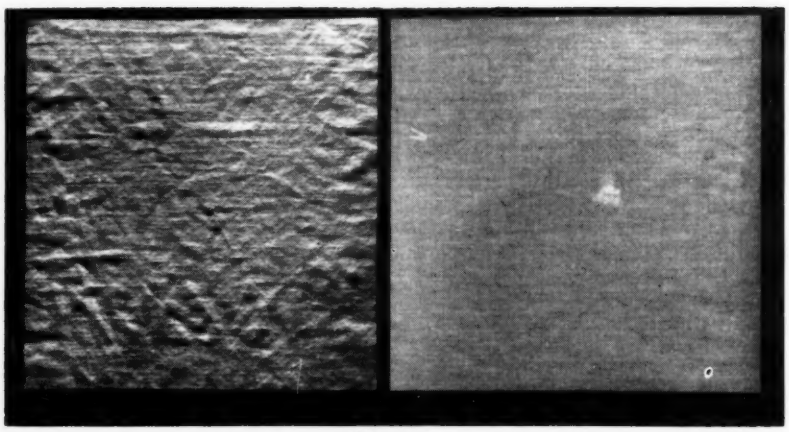


Figure 6
Photographs of fabric having a rating of 3

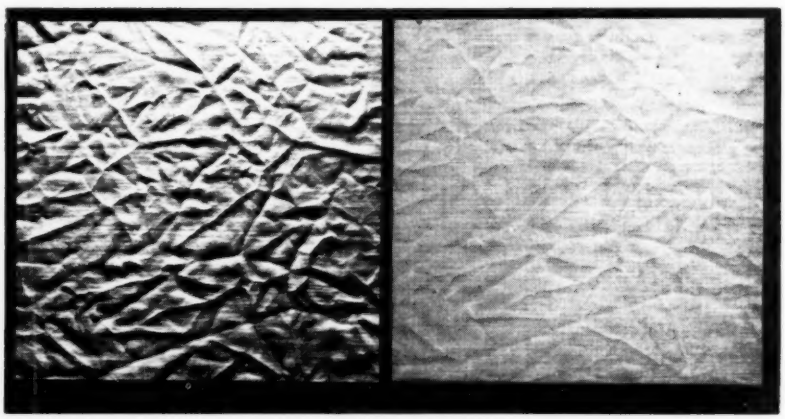


Figure 7
Photographs of fabric having a rating of 1

Once one changes the severity of lighting, it then is necessary to come forward with comparative photographs made under similar conditions.

Figure 4 shows a photograph of two different lighting and viewing conditions. The left half shows the lighting box and sample in approximately the conditions described in TTM 88-1958. The camera is located directly above the sample in this photography instead of being positioned to the side as called for in the method. This represents very low angle lighting. The

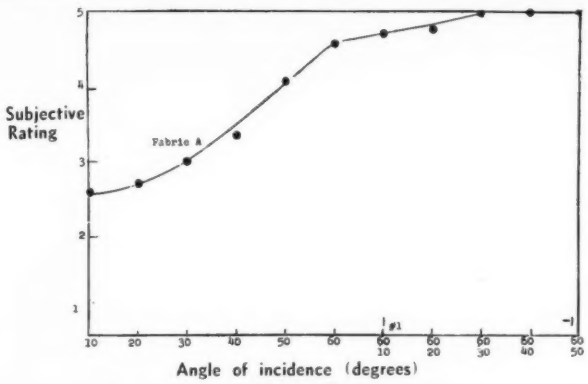
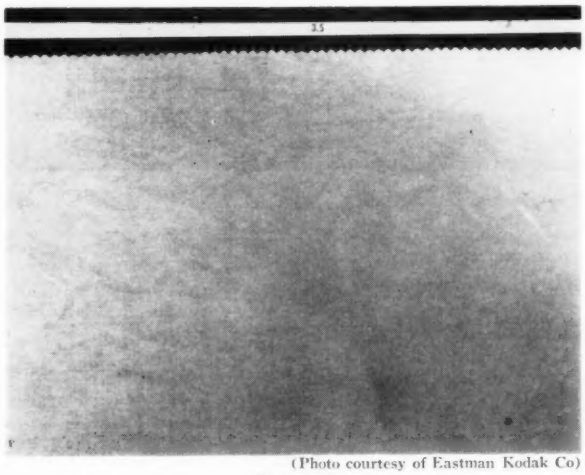


Figure 8
The effect of the incident light angle on the subjective rating of fabric



(Photo courtesy of Eastman Kodak Co)

Figure 9
A fabric having a 3.5 rating under conditions used by one testing firm

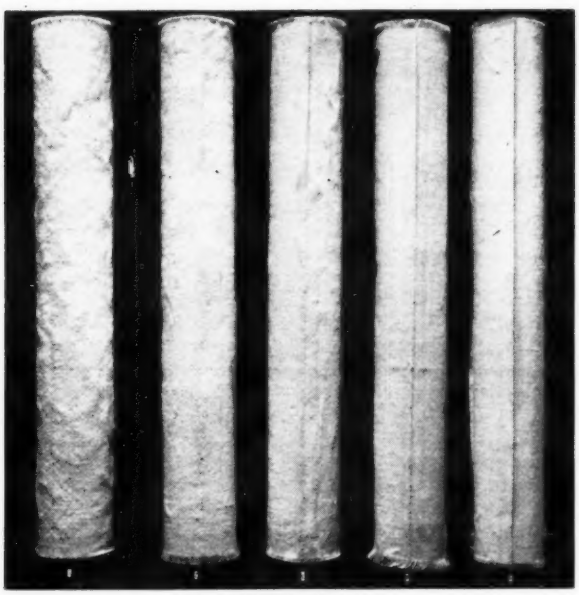


Figure 10
Exploratory photograph for consideration in crease evaluation

right half shows a lighting and viewing system using diffuse light with a wider angle for impingement of light on the sample.

With these two arrangements, two sets of photographs were made using the same fabric in the two different lighting conditions. Fabrics for these photographs were selected as closely as possible to give exact ratings of 5, 3 and 1 using TTM 88-1958. Figures 5, 6 and 7 show the difference in fabric appearance when viewed under these two different lighting conditions. In all cases, the low angle lighting exposure is shown on the left and the diffuse light exposure is shown on the right. Figure 5 depicts a fabric having a 5 rating; Figure 6, a fabric having a rating of 3; and Figure 7, a fabric having a rating of 1. From these one may conclude that it is possible to rate these fabrics good or bad depending on which type of viewing is used.

Further laboratory work, summarized in Figure 8, has shown that the subjective rating for a given sample using the same light under conditions where the angle of light incident with the fabric is varied from 10° to 60° causes the subjective rating to vary from 2.6 to 4.7. In addition, by introducing an opposing light in the opposite direction, the same fabric may be rated a perfect 5. This test was performed using the average of the subjective values obtained by five different raters. In other tests it has been established that the intensity of light is not too significant as long as it is within the reasonably visible range and does not produce a severe glare.

Consideration is also being given to the use of an actual three-dimensional replica of fabric for comparison purposes instead of photographs as our method now indicates. This would permit one to compare fabrics with the replica under severe light for the research approach and under diffused light for a more favorable sales presentation.

To illustrate the approach being taken by one testing firm, Figure 9 shows one of a set of photographs made under diffused lighting conditions. This photograph represents a 3.5 rating for the fabric in this lighting system.

One of our subcommittees is developing procedures for evaluating the smooth appearance of pleats, creases and seams. Some work has already been done in making photographs (Figure 10) of a range or spread in the appearance of creases having different degrees of retention. Similarly, in Figure 11, which represents a

range in appearance of seams used in sewing zipper tapes, the two lower garments show better appearance than the three upper ones. These serve mainly to demonstrate the type of photographs that may be used, but do not represent the results of a concentrated committee effort. They show that, once agreement is reached, photographs or replicas of this type would be useful in evaluating component areas in a "wash and wear" garment.

Beyond these considerations, we are working to develop methods for fabrics, such as corduroys and embossed fabrics, having special surface effects that do not lend themselves to evaluations using standard procedures already discussed.

Even when we have worked out all of these problems, our job as textile technologists will continue. We know, for example, there will be an evolution in fabrics. In the future, when we look back at "wash and wear," recognition will be given to the fact that the textile industry was limited in fabrics to those having the appearance and aesthetics known today. Most every "wash and wear" garment today is made with the idea of holding fabric appearance and aesthetics in line with present standards. However, with time, these bonds will yield to new fabrics having better functionality. For instance, if one could take advantage of the properties exhibited by a fish net or a sheet of rubber there would be no wrinkle recovery problem. We should learn to take full advantage of these properties in order to obtain improved "wash and wear" garment performance.

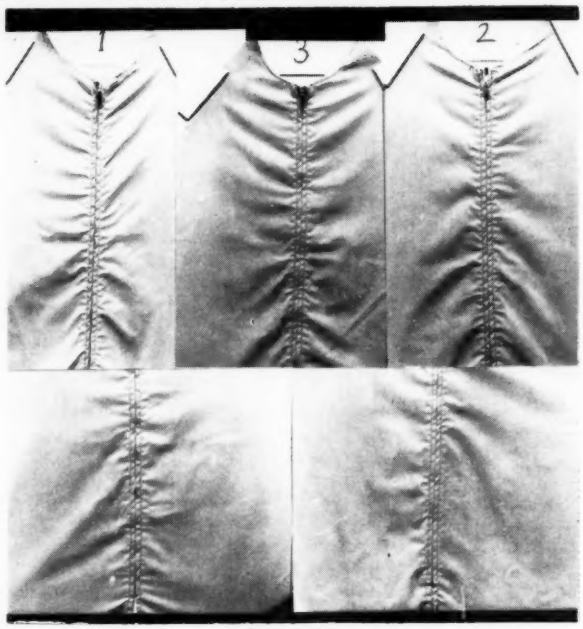


Figure 11
Exploratory photograph for consideration in seam evaluation

For the future, we predict that the next three years will bring considerable change in our procedures. Our Committee is anxious to make its methods more useful to the textile industry and it is working vigorously to that end.

Report on AATCC Committee on Colorfastness to Light

JOSEPH E NORTON

Atlas Electric Devices Co

Chairman, AATCC Committee on Colorfastness to Light

THE AATCC Committee on Colorfastness to Light some time ago established four working groups or subcommittees, each of which is concentrating on specific and limited areas of the complex problem.

SUBCOMMITTEE I——Subcommittee I is studying both the sunlight and daylight test methods with a view towards establishing statistically the limits of reproducibility and repeatability that may be expected by those methods and on possible modifications and improvements of both the methods and standards.

Some time ago, Subcommittee I, in its published report on the first phase of its program, clearly demonstrated that the sun hour or any other method of conducting natural light exposures on a time-exposure basis, produced results which varied so greatly that they were of no practical value or usefulness. At that time, it stated that, while the langley method of exposure showed considerable promise, the Blue Wool Standards should be continued as the official method of reporting lightfastness ratings until more information was available.

Since that time, Subcommittee I has completed monthly exposures for twelve consecutive months at Phoenix, Arizona, and Sarasota, Florida, and for seven months at Chicago. Twenty-eight dyestuff-fiber combinations and both the AATCC and ISO standards were thus subjected to 31 different exposures.

Each dyeing in each exposure was exposed for whatever time was required for it to receive the same number of langleys.

Since some may not be entirely familiar with the langley method, a brief description of it may be in order.

Langley units of radiation, as measured by the Eppley Pryheliometer and suitable recording and integrating equipment, are a measure of the total radiation received. While we usually refer to a sample as having received a given number of langleys, this is an abbreviation of "langleys/minute". A langley/minute is defined as one gm cal/cm^2/minute. Thus, if the

intensity of the radiation is one gm cal/cm^2, in one hour we would have 60 langley/minutes or, as it is more commonly used, 60 langley units of exposure. At an intensity level of 0.5 gm cal/cm^2, in one hour we would thus receive 30 langley units. The radiation intensity from sunrise to sunset will, of course, vary from minute to minute so that integration of the intensity and time is necessary in order to express the amount of radiation the sample has received.

All of the exposures have been graded and the data at the present time are being analyzed statistically after which we hope to publish a report.

While a statistical analysis will be much more precise, from a casual examination of the data we have observed certain trends and general information.

On most dyestuff-fiber combinations studied, there is reasonably good correlation in the amount of fading in the 31 exposures. Most dyeings for the same number of langleys will show at least slightly more fading in hot summer weather than in winter weather. Some dyestuff-fiber combinations which are particularly temperature-sensitive, like nylon, will show considerably more color change in summer exposures. As a class, wool, which, of course, includes the standards, shows the least sensitivity to temperature.

Some materials, such as direct dyestuffs on cotton, appear to be sensitive to moisture. This, however, is not encountered in the sunlight test where the samples are placed in the test cabinets only between the hours of 9 am and 3 pm on sunny days. The absorption of the high level of radiation intensity during these hours causes the specimen temperature to rise to a point where all moisture is driven from the samples, and under these conditions the relative humidity of the air has little or no effect on the moisture content of the specimens. In the daylight test, where the specimens remain in the test cabinet 24 hours a day, moisture sensitivity is emphasized. During the night, the test specimens are in equilibrium with the air, and their moisture content is thus directly related to the relatiye humidity of the air. In the morning, as the sun rises, the samples are thus subjected to low-level-intensity radiation while having a high moisture content. As the sun continues to rise, so does its intensity and likewise the specimen temperature. As the specimen temperature rises, the moisture content of the specimen progressively decreases. Likewise, on cloudy days with a low radiation intensity, the specimen temperature will be low and the moisture content high.

Under these conditions of high moisture content, a small number of langleys will produce considerable fading on moisture-sensitive samples.

In general, the AATCC Blue Wool Standards in the 31 different exposures showed a minimum amount of variation between exposures. The lower-numbered standards have been found, however, to be slightly more moisture-sensitive than the higher-numbered standards. However, considerably more variation was observed in all the ISO standards, which confirms other work done using both types of standards.

In general, the langley method produced variations in results which were probably not as great as those produced by the AATCC Blue Wool Standards. In using the Blue Wool Standards, it should be borne in mind that one is always rating an unknown on the basis of these standards. A sample which has a similar sensitivity to both moisture and temperature as the standards would thus, under different exposure conditions, always receive the same rating. However, a direct dyestuff on cotton which is moisture-sensitive would, in a sunlight test, receive a much higher rating than it would in a daylight test during a cloudy period. Conversely, an Orlon sample of a low-to-medium lightfastness class, which was not moisture-sensitive, would receive a much higher rating in a daylight test than it would in a sunlight test. Nylon, which in some cases is sensitive to both moisture and temperature, would be expected to show the greatest variations between daylight and sunlight tests and between winter and summer exposures.

For these reasons, in order to obtain maximum information, we now believe it is desirable to run both a daylight and sunlight test on a langley basis and to include the Blue Wool Standards.

SUBCOMMITTEE II———Subcommittee II is studying various laboratory methods with a view towards improving their correlation with natural light tests. Since natural light intensity and spectral distribution, temperature, relative humidity, and the amount and kind of atmospheric contaminants will vary from hour to hour, day to day, and from place to place, it will never be possible to directly correlate natural light exposures with laboratory tests. The Committee does believe that it is desirable to promote the adoption of test conditions that will produce results which have an acceptable reproducibility and which are in reasonably good general agreement with the two types of natural light tests.

Plans are now completed and the work started on an interlaboratory test program in which several methods in the Fade-Ometer, Xenotest machines and other types of apparatus will be compared with both sunlight and daylight exposures at various times of the year at three locations.

SUBCOMMITTEE III———Subcommittee III is investigating the combined effects of light and atmospheric contaminants and a report of the preliminary work has been published. From this and subsequent work it is now believed that information may be developed which will be of great help in explaining some of the reasons for the wide variations encountered on some materials in natural light exposures and particularly the daylight exposures made at different times and locations.

There are indications that there is a cumulative effect of light combined with atmospheric contaminants, which does not occur when the various factors are applied individually. In the past, many peculiarities in fading have been attributed to moisture sensitivity. We now believe that many of these may actually be caused by atmospheric contaminants whose activity requires or is greatly increased by the presence of moisture, as is encountered in the low-radiation periods of the daylight test.

Work of this subcommittee has been delayed due to lack of equipment suitable for its work. It is now hoped that special equipment will shortly be made available for its use in which the specimens can be exposed to light under controlled conditions of moisture content, temperature, and concentrations of the various atmospheric contaminants.

A thorough study of this together with the possible development of special equipment and standard test methods should, in the long run, be very beneficial to the textile industry in improved colorfastness.

SUBCOMMITTEE IV———Subcommittee IV is concerned with colorfastness to weathering. This group will deal only with colorfastness to weathering as differentiated from physical changes due to weathering, which is being studied by the AATCC Weathering Committee.

As a first step, it will be necessary to develop a natural weathering test

together with standards which can be used as a basis for the development of laboratory methods. In this, the committee has agreed to cooperate with an ISO task group, which, through member countries, has already done considerable work on a method that utilizes a set of vat-dyed standards, which are claimed suitable for this purpose. Other standards already developed or in the process of development by other industries will also be investigated.

At the present time the group is in the process of collecting suitable fabrics in quantities sufficient for current and future studies.

Research Developments—AATCC Committee on Colorfastness to Washing

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Secretary, AATCC Committee on Colorfastness to Washing

THE first wash tests developed by the AATCC were based on the classes of dyes used to color specific fabrics. Today, washfastness is recognized as an end-use property, without consideration for the dyes employed or for the fiber content of the garment. Present AATCC wash test procedures form an integral part of the colorfastness specifications in American Standards L22 and L24, in the standards of the Textile Distributors Institute, and in informative labeling. These test methods also are important to the textile industry for control of manufacturing operations, quality of finished product, and evaluation of new fibers, fabrics, and finishing treatments.

The washfastness of colored fabrics has always been considered an important property of textiles. It is interesting to note that, in 1922, only one year after the AATCC was founded, a Washfastness Committee was organized and subsequently developed the Launder-Ometer (cf October 28, 1928 issue of *American Dyestuff Reporter*). These events marked the beginning of reproducible test procedures for washfastness. During this period, and for many years thereafter, there were separate washfastness tests for cotton and linen, for silk, for wool, and for manufactured fibers. Most of these tests have since been eliminated from the *AATCC Technical Manual*, with present emphasis in testing procesdures placed on end-use requirements rather than on fiber content or types of dyes employed.

The washfastness tests for cotton and linen, as developed in the early 1930's, were essentially the same as the present Standard Test Method 36-1957; however, over the years, certain changes have occurred which make the method more accurate and results more reproducible. Rubber balls have been replaced with those of stainless steel. The multifiber test fabric and the color transference chart have made it possible to evaluate staining more efficiently, and finally, the International Grey Scale provides a simple and accurate method for measuring small color differences.

The colorfastness test for dyed or printed cotton and linen, as given in the 1944 *AATCC Technical Manual*, carries a footnote which reads in part. . . .

> "It has recently been demonstrated in the textile field that a Launder-Ometer test such as described in this Standard is not sufficient to identify the colorfastness of pigment colors which may have been improperly cured."

This condition, and the further realization that the test procedures were not adequate to predict the washfastness of dyed or printed fabrics to commercial or home laundering, led to a decision to do sufficient work on the problem to produce a reliable test that would give accurate information as to the washfastness of colored fabrics. The first work carried out under this program was with 41 dyed or printed fabrics possessing good-to-medium fastness to commercial or home laundry washing at a temperature of 120° to 140°F without bleach. These samples were washed in commercial laundries throughout the United States by the methods regularly employed for fabrics of the type submitted and by six laboratories using home-washing procedures.

Samples were removed from each test fabric after one, five, 10, 15, 20, 25, and 30 washings. The thousands of individual samples which resulted were rated for loss of color and the average amount of color removed was established statistically.

The median values for the various samples were used by the AATCC Research Laboratories at Lowell as reference standards in developing a laboratory test to correlate with the results of actual laundering.

It was obvious, at the beginning of the laboratory work at Lowell, that a Launder-Ometer equipped with glass jars would not give enough mechanical action to duplicate, in any reasonable test period, the average amount of color removal produced by repeated commercial or home laundering. The present test method, using stainless-steel jars, stainless-steel balls, and low liquor-to-goods ratio, was evolved only after a considerable amount of laboratory work.

The same technique, which resulted in the IIIA test, was used in developing the test method for the colorfastness of fabrics washed at 160°F using bleach and for fabrics washed with a short formula at 100°F without bleach. These tests are the present Standard Test Method 61-1957 Accelerated Test Nos. IIA, IIIA, and IVA.

The accelerated washfastness tests are exactly as the name implies. These tests are designed to produce in 45 minutes the amount of color loss which normally would be developed by five consecutive commercial or home launderings. It is evident that, in order to accomplish such a result, the test method must be more severe in certain characteristics than the washing method to which it is related. This is the basic reason why the temperatures used in the IIA and IIIA tests are in excess of those occurring in laundering and for the amount of bleach used in the IVA test.

The important thing to note with respect to these tests is that they will predict the color loss which will re-

sult from five average commercial or home launderings. This relationship, which was built into the tests, has been amply proved by the results obtained in different laboratories in the period since they were developed.

After the accelerated tests had been developed and incorporated into the *AATCC Technical Manual*, the question arose as to whether the use of synthetic detergents or fluorescent dyes in the washing process would produce noticeable errors in the test results. These factors were investigated by the Washfastness Committee and found to have a negligible effect on the test results.

The 36 series tests have been used for many years in the measurement of staining. These tests are listed in the 1957 *Technical Manual* as "Wash Test for Characterization of Textile Colorants" and are no longer considered to be end-use tests.

This raised the question as to whether staining should be evaluated by the 36 test, and color washdown by the 61 test. Extensive work carried out with relation to this problem has indicated that there is no appreciable difference in the amount of staining produced by the two types of tests in spite of the considerable differences in the test procedures. The 61-1957 test will, therefore, give the required information with regard to both washfastness and staining.

The 61-57 test, as originally published in the 1951 *Technical Manual*, did not provide an adequate method for rating the amount of color loss. Various methods of determining small color differences were investigated and, in 1954, the International Grey Scale was introduced into the method for rating the amount of color loss. It has proved to be very satisfactory.

The accelerated tests cover only the ordinary range of textiles in consumer use. They are not intended, nor are they adequate, to predict the colorfastness of work-clothing fabrics when subjected to industrial use and to the washing methods employed by industrial laundries.

The washing procedures employed are characterized by high alkalinities, low soap usage, and temperatures of 180°F or over. No bleach is employed in these formulas but, even so, they provide a severe test for even the best vat-dyed fabrics.

The procedure for developing a test method for evaluating the colorfastness of work-clothing fabrics was essentially the same as that used for Standard Test 61-1957. Three series of washings were carried out in industrial laundries and the washed fabrics were used as reference standards by the AATCC research staff in developing a test procedure which would predict the color loss to be expected from five industrial launderings. The development of the new Tentative Test Method 87-1958 is described in the October 6, 1958 issue of *American Dyestuff Reporter*. It is interesting to note that the main cause of color removal by industrial laundering is wet abrasion, which is duplicated in the test method by the use of the Accelerotor. This new test method should prove an important tool not only for measuring the colorfastness of fabrics to industrial laundering, but also in the development of new dyeing methods or fabric finishes which will give increased washfastness to such fabrics.

The American Standards L22 and L24 provide for a "hand-washable" category. From a colorfastness standpoint, such fabrics are presumably made of textiles which would fail the IIA test and yet would not show excessive loss of color when washed by hand. Work designed to set up a method of measuring washfastness at this level was carried out during the development of the present "A" series of tests. Results of this investigation indicated that fabrics possessing good fastness to hand washing would, in most cases, pass a IIA test. However, since the inclusion of a hand-wash category in the American Standards, the Committee on Washfastness is duty bound to reinvestigate test methods for this level of washability. Fabrics are now being collected for an interlaboratory survey on hand washing to serve as the basis for a mechanical test. If the results of this work are fruitful, the Accelerated series of tests will be completed with a IA test that will predict the color loss of five average hand washings.

AATCC, a member of the ISO working group on colorfastness to washing, recently completed a series of tests to determine the degree of correlation between the proposed ISO test methods and AATCC test methods.

It has been a pleasure to be a participant in this joint meeting of our two Associations. It is sincerely hoped that, through the presentation of this paper and with the discussion period to follow, items of mutual interest will have been discussed that will lead to improved correlation between the test methods employed in our two countries.

Research Developments—AATCC Committee on Damage Caused by Retained Chlorine

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Chairman, AATCC Committee on Damage Caused by Retained Chlorine

THE Committee on Damage Caused by Retained Chlorine has had as its primary objective, since its formation in 1948, the development of a reproducible test method for determining the susceptibility of a fabric or finish to damage from retained chlorine as might occur in laundering—home or commercial.

Initial work was confined to rayons because it was from aminoplast resin-treated rayons that most of the dissatisfaction and complaints of retained chlorine damage stemmed. A great deal of effort went into experimentation over a period of time in evolving Tentative Test Method 69-52, which first appeared in the 1952 *Technical Manual*. This method was recognized as inadequate by the original committee for the even-then-known requirements, but the urgency due to the many complaints of damage necessitated a tentative procedure be made available until a more acceptable method could be developed. At about the same time that this Tentative Test Method was first published, the problem of dam-

age due to retained chlorine on resin-treated cottons became critical. This generally renewed and generated wider interest in the phenomenon of chlorine retention.

Therefore, in 1953, heeding the comments and criticisms that the published method had prompted, and also, taking cognizance of the admitted shortcomings of the published method, the Committee began working on a new test procedure. This new procedure was the same in principle as that previously published; in fact, the principles of the original procedure are to be found in the present or newly adopted Tentative Test Method 92-1958 even though many other avenues were explored and discarded.

In essence, the method for determining the susceptibility of a fabric or finish to damage from retained chlorine consists of five main steps: 1) prewetting; 2) chlorination per se, wherein time, temperature. pH, liquor to cloth ratio, and available chlorine content are specified; 3) rinsing, drying, and conditioning; 4) scorching at 365°F for 30 seconds; and 5) tensile strength determinations before and after scorching after proper conditioning. It is to be appreciated that four of the five main steps are quantitative in the sense that an attempt is made to limit or control a reaction, or to measure the effect of such a reaction. It is therefore obvious that errors introduced through lack of precision or specification can readily be cumulative. Also, certain of the operations must, by their very nature, have limitations placed on them, eg, the chlorination must be limited to preclude degradation through oxycellulose formation, and the scorching conditions must be specified short of pyrolysis degradation in the heating of untreated cotton.

Starting then in 1953, the Committee began to conduct interlaboratory tests to establish the degree of precision necessary in specifying or defining the numerous variables in every step of the procedure. Difficulty was encountered in the very first interlaboratory test, which led the Committee on to many devious and intricate interlaboratory tests and individual experimentation to isolate the source or sources of trouble. In spite of the vast amount of work that went into such experimentation over a two-year period, our goal continued to elude us. However, we did achieve reproducibility within laboratories. Also, all of the facets of the problem we were and are confronted with only became clear through the vast amount of work done by the Committee, and in view of more recent papers on the subject and also the subsequent work done by the Committee, it may safely be said that it will be sometime further in the future when all aspects and ramifications of the problem stand in clear relief.

However, our experience at that time did show us how slow our progress would be if we continued with our old approach. Consequently, in late 1956, the groundwork was laid to more expeditiously facilitate the Committee's work.

At that time, therefore, the Committee voted the adoption of a proposal for a new approach, and an extensive program was then drawn up to implement the voted proposal.

The basic features of this program are twofold: 1) the establishment of six task forces or subcommittees to simultaneously explore different facets of the problem, and 2) the establishment at AATCC headquarters at Lowell of a research project to investigate certain aspects of the problem particularly with respect to the precision of the revised test procedure.

The subcommittees and their specific assignments are as follows:

1) *The Formulations Subcommittee*———to determine the choice of resin, catalyst, and/or other additives to be used as the standard finish or finishes by the other subcommittees in their experimental work. Also, to study the behavior of various types of resin finishes.

2) *The Prewetting and Chlorination Subcommittee*———to study the effect of all the variables in the prewetting and chlorination steps of the procedure.

3) *The Rinsing and Scorching Subcommittee*———to study all facets of the rinsing operations, scorching procedure, and the effect of varying conditioning times of the test procedure.

4) *The Usage Subcommittee*——— to determine the performance in commercial and domestic launderings of the standard fabrics and finishes to be used and the correlation of same with the revised test procedure results as obtained by those committees experimenting with standard finishes and fabrics.

5) *The Nonresin and Colored Yarn Subcommittee*———to determine the behavior of colored yarns and nonresin finishes, including chlorine-sensitive dyestuffs and various textile auxiliaries, eg, certain cationic softeners.

6) *The Steering Committee*——— to pass on test method revisions and publications, to coordinate the work of the various subcommittees, to direct the research project at Lowell, and to act as liaison between it and the various subcommittees.

The project at Lowell has as its objectives:

1) to establish equipment for performing the revised test procedure with the utmost control and reproducibility of every conceivable variable,

2) to determine how reproducible the test is under such conditions, and

3) to determine how variable damage due to retained chlorine is within a piece of fabric.

To carry out such a program necessitated securing a large amount of uniform or standard fabric. The scope of the program precluded depending on voluntary contributions of fabrics or finishes. There were a number of obvious reasons for this, but the primary one was to eliminate the confusion that resulted in past work from having a different fabric and finish every time an interlaboratory test was conducted. Consequently, the AATCC Executive Committee on Research was petitioned and made available $1000 to cover the purchase and finishing of approximately 3000 yds of fabric estimated for our needs. Authorization was also granted by the Executive Committee on Research for the establishment of the project at Lowell.

The new program was launched early in 1957. As mentioned, reproducibility within laboratories was established earlier, but the subsequent continuing work of the Committee also demonstrated that we had further achieved reproducibility between laboratories on fabrics showing a high or low level of damage. An interlaboratory experiment of the Formulations Subcommittee demonstrating such reproducibility between laboratories may be seen in Table I. Here we see the results obtained on a cotton treated in one instance with a triazone resin, and in the other with a straight urea-formaldehyde paste. Within reasonable limits of error, the agreement is rather good.

TABLE I
Percent loss due to retained chlorine

	Laboratory					
	A	*B*	*C*	*D*	*E*	*F*
Triazone	7	6	3	8	15	2 9
UF	87	100	91	94	100	92 5

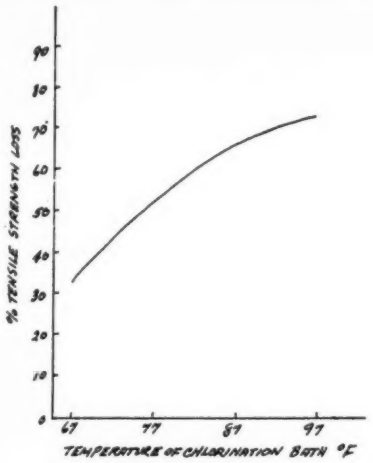

Figure 1
Effect of a temperature variation in the chlorination bath upon tensile strength loss

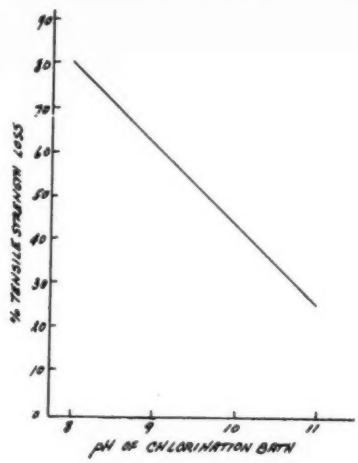

Figure 2
Effect of varying the pH of the chlorination bath upon the loss in tensile strength

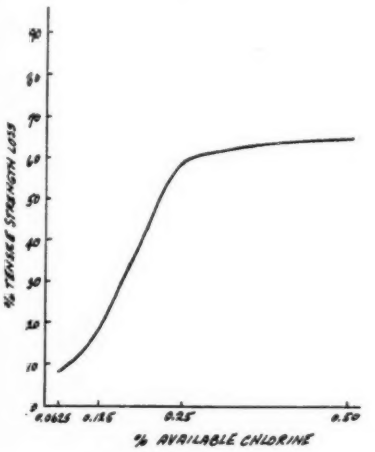

Figure 3
Effect of varying the NaOCl concentration upon tensile strength loss

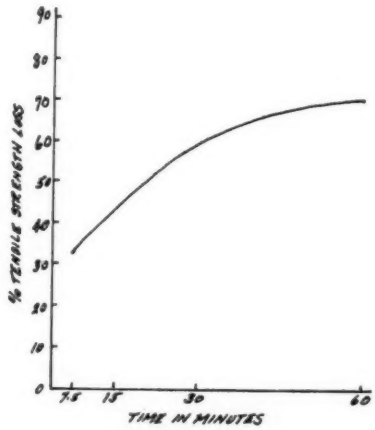

Figure 4
Effect of varying the time of chlorination upon the loss in tensile strength

After a great deal of effort, the Formulations Subcommittee produced a resin-finished fabric carefully designed to give damage in the intermediate range, since it is in this range that interlaboratory reproducibility continued to elude us. This fabric was then made available to the various subcommittees to carry out their simultaneous investigations in accordance with their predetermined planned programs.

The degree of reproducibility achieved and repeatedly demonstrated in late 1957 and early '58 was the result of much experimentation on the part of the various subcommittees. Their work enabled a more precise specification of the variables in the various steps of the procedure to be made.

The importance and effect of certain of the variables in the chlorination step of the procedure may be seen in Figures 1, 2, 3 and 4.

In Figure 1, the percentage tensile strength loss due to retained chlorine is plotted against a varying chlorination temperature from 67°F to 97°F. As may be seen, even in this small spread of 30°, the tensile strength loss changes considerably.

In Figure 2, the tensile strength loss is plotted against chlorination bath pH from a pH of 8 to a pH of 11.

Figure 3 shows the effect of varying the available chlorine concentration.

Figure 4 shows the effect of varying the time of chlorination.

Thus may be seen the importance of defining quite precisely the conditions of chlorination, especially, of course, with respect to temperature, pH, time, and available chlorine concentration.

In mid-1958, the Committee felt that it should submit a new tentative test method to replace the tentative method on the books since 1952. The main reasons for doing so were: 1) experience had demonstrated and extensive questionnaires the Committee had circulated on several occasions pointed up the necessity for being more explicit on instructions quite capable of misinterpretation; 2) considerable experimental data had been obtained to enable more precise specification of many variables to be made, particularly with respect to chlorination; and 3) with the improved degree of reproducibility between laboratories at high and low levels of damage we felt we had a considerable improvement to offer by proposing the adoption of the new method.

Consequently, the new Tentative Test Method was proposed at the September 1958 meeting of the Committee, and approved by letter ballot of TCR in October, 1958. It was published in the January 12, 1959 issue of *American Dyestuff Reporter* as Tentative Test Method 92-1958.

To demonstrate the workability of the new method, early this year an interlaboratory test among laboratories not represented on the Committee was set up. The laboratories were supplied with standard fabric by the Committee with the request that the newly published method be followed in determining the chlorine damage characteristics of the fabric in their laboratory. Eleven laboratories participated and the results of this study may be seen in Table II. The fabric, of course, was one known to give a high level of damage. We felt the degree of correlation obtained was highly gratifying.

It must be remembered that the new method is a *tentative test*—that

TABLE II
Summary of chlorine-retention results from independent laboratories

Laboratory	Tensile strength in pounds T_o	Tensile strength in pounds T_{60}	% Loss due to retained chlorine
A	43.8	12.6	71.2
B	48.5	16.6	65.8
C	47	16.8	64.2
D	42.0	15.4	63.3
E	45.0	17.7	60.7
F	45.2	13.2	70.8
G	44	14	68.18
H	47	12	74.47
I	41.6	7.4	82.3
J	44	16	63
K	44.3	9.1	79.5

experimentation on many facets of the problem is continuing by the various subcommittees charged with exploring different facets of the problem. It is to be hoped that the results obtained may enable us to further pin down the effect of the many variables that play a role in the phenomenon of chlorine retention and enable us to so refine the method as to make it universally accepted and valid.

A Report on AATCC's Interlaboratory Statistical Plan

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ON January 1, 1959, AATCC put into operation its new Interlaboratory Statistical Plan—a system of record keeping by which various laboratories that handle consumer complaints can report uniformly on the kinds and numbers of complaints handled. The Plan involves the use of a standard record-keeping form and the gathering of data from these forms at specified intervals. The first reporting period was set to close March 31 and we now have reports for this period from eight laboratories. A separate form is provided for rug and carpet complaints.

The Committee has not had time as yet to study these reports or to determine how best to utilize the information and evaluate its significance. For this reason, I am not at liberty to do much more than to describe the Plan, to explain its objectives, and to comment on some of the data received in the initial reporting period.

To begin with, the Plan grew out of a realization that testing laboratories as a group are a valuable source of data on the kinds and prevalency of problems that give rise to consumer complaints. It was found, however, that each laboratory has its own way of accounting for its work on consumer problems, if, in fact, it keeps any records at all. Thus, our first step was the development of some kind of standard statistical form which any laboratory could adopt for its use and from which it could make periodic reports to a central, data-collection point. These forms are now available to any laboratory from AATCC Headquarters and they include a Manual of Operation, which explains how to use them.

Apart from the data itself, the operation of the Plan has some important side effects. For one thing, the laboratories which use the Plan can more readily communicate with each other with respect to the various problems that concern them. Perhaps of even greater importance is the fact that, in the regular meetings of the supervising AATCC Committee, namely the Committee On End-Usage Performance Tests, laboratory representatives have an opportunity to exchange information on the proper cataloging of complaint types. In other words, there should be less conflict of laboratory opinion on complaint causes as time goes on and a more accurate accounting of complaint problems for the industry as a whole.

The Plan is valuable also as a publicity tool. It is far more effective to report on a situation statistically, than to be limited to making only a general kind of statement on any given situation. Thus the impact of statistically supported information is more likely to generate corrective action to minimize the problem than is otherwise the case.

So much for what the Plan will do. What does it fail to do? It is important tant to keep in mind that any laboratory receives but a very small percentage of all the consumer complaint problems that exist in the area which the laboratory serves. In other words, the data the Plan produces is but a fraction of the total complaint picture. Of course, recognition of this fact should greatly increase respect for the data that are reported. For every one complaint received then for laboratory analysis, how many comparable complaints exist that are not received? Is it 100? Or 1,000? Maybe 10,000? We can only accept that it is many times the data actually reported, which, as we say, should greatly increase our regard for that data.

Even more important to keep in mind is the fact that a laboratory does not receive all types of consumer complaints. We rather like to divide all complaints into two categories: 1) the type that results in sudden and complete loss of value of the article, and which is apparent enough to motivate action by the consumer to seek redress, and 2) the type of damage problem that takes place too slowly to motivate the consumer to complain, but which nevertheless results in unfavorable markets for textiles. In short, the consumer might not complain, but she won't buy the same article again.

The kinds of problems any one laboratory receives tend to fall into some limiting pattern or area depending on the nature of the business it serves, eg, the NID laboratory is concerned only with complaints that are received by drycleaners. The Interlaboratory Statistical Plan, which brings together many laboratories into a common system of reporting, makes available a more detailed analysis of the whole textile complaint picture and assures greater accuracy of complaint typing.

Now, what sort of information do we expect to find in our first reporting period? This is an interesting question even to those of us who have been involved in the development of the Plan. Frankly, we are not yet certain what we will find. But let us look at some of the figures. A summary follows:

A) COMPLAINTS ATTRIBUTED TO FABRIC FAILURE	
Involving fabric itself	987
Color loss or change	834
Finish problems	143
Total fabric failure complaints	1964
B) DAMAGE DONE TO FABRIC	
Involving fabric itself	1988
Color loss or change	630
Finish problems	349
Stains	991
Total damage to fabric	3958

It is interesting to note there are almost twice as many complaints of damage done to textiles at the consumer level, as there are complaints caused by fabric failure. True, most of the laboratories in the group initially participating in the Plan handled relatively few problems in a three-month period, whereas

one laboratory alone handled 4,806 problems out of a total of 5,836. All kinds of other interesting observations can be made even from a very general summary of the data, the usefulness of which would depend on who is doing the observing. Beyond this point, we will ultimately be able to report the percentage relationship of even the particular types of problems involved.

We recently took the first page of the form from each laboratory report and arrived at a composite, as shown in Table I. You will see that all the points earlier stressed as advantages which the Plan offers are illustrated: 1) some laboratories have problems not commonly seen in the others, 2) laboratories can communicate more readily the degree of trouble they are having in specific problem areas and can be sought out for advice on the problem, and 3) statistical relationships can be established for whatever purpose need be served. This, of course, is but one page of the six pages in the form, but we think it shows how useful such a compilation can become.

One of the problems we face in the further development of the Plan is to provide a more detailed breakdown of complaint types. This will add to the number of pages and to the detail of reporting. Also, some members of the Committee have said that the data are useful only when the particular products involved are pointed out. We provide for some indication of this in the present plan, but how far we can go in the future to satisfy this need is in question. It may be necessary ultimately to limit the references to complaint types, and depend on the laboratories to explain (on request only) the breakdown of particular complaints. For instance, the composite (Table I) shows that one laboratory handled 208 complaints of shrinkage in drycleaning. While a note in the fiber and fabric columns (not shown) explains that these were to a large extent wool and wool acrylic-type jersey fabrics, it might be important to know also that these involved both printed and plain shade goods, a fact which does not appear in the data. In any case, the composite page presentation makes it possible to communicate with sources that can explain a particular situation in detail.

TABLE I

Experimental, eight-laboratory summary of first page of AATCC's six-page Interlaboratory Statistical Plan

1. Fabric

		Totals by Laboratory								*Composite totals*
		A	*B*	*C*	*D*	*E*	*F*	*G*	*H*	
a)	Shrinkage — L		4	4		1	16	1		26
	— D	3						1	208	212
b)	Stretch — L						1			1
	— D						1		4	5
c)	Distortion — L									0
	— D								3	3
d)	Yarn slippage						3		42	45
e)	Yarn shifting	1					4			5
f)	Shedding						1	1		2
g)	Permanent wrinkles			1					8	9
h)	Tensile strength		2	5			2			9
i)	Tear strength									0
j)	Tendering of yarns									
	1) Sunlight atmos						8		165	173
	2) Dye or auxil	2			1				50	53
	3) Finish	7					1			8
	4) Calendering								21	21
k)	Pilling		13		1		6		11	31
l)	Matting or tufting						5	5	16	26
m)	Fabric splits	3					12	1	197	213
n)	Abrasion or wear				1		61		37	99
o)	Others	2				2		1	41	46
Total yarn and cloth		18	19	10	3	3	121	10	803	987

But the composite-page idea has its limitations also. With more laboratories joining in this Plan, the more difficult it becomes to offer this kind of summary. At least it seems difficult at this stage.

We are frank to admit that, up to this point, no clear plan of data presentation and utilization exists. We are exploring all possibilities, however, and feel certain that, because the concept of the Plan is sound, ultimately its proper form of utilization will become apparent. Meanwhile, we encourage laboratories in all countries to adopt the Plan and join with us in making it a useful source of data for all concerned.

Research Developments—AATCC Committee on Dimensional Changes in Textile Fabrics

JOHN F WARNER
Fuller Div, J P Stevens & Co, Inc
Chairman, AATCC Committee on Dimensional Changes in Textile Fabrics

IN 1953, as a result of the increase in the production of new textile fibers, their use in blends with the natural fibers, and the prospect that this trend would be greatly accelerated in the near future, the Committee on Dimensional Changes in Textile Fabrics undertook an extended program of studying the shrinkage of fabrics in laundering with the thought of later developing satisfactory laboratory tests which would correlate with practical usage.

At the time there were only two generally used shrinkage tests—one for woven cotton piece goods at the boil, and the other chiefly for handwashable wools. However, about that time the Federal Government issued a new test for cotton containing changes in the length of time the cloth specimens were washed—specifying they were to be boiled for the entire 40 minutes of wash instead of being brought to the boil only at the start of the test. Another change was the size of the load, which was increased from three lbs to six and eight lbs.

During 1953 and 1954, in meetings

held in New York by Subcommittee 2 on "Shrinkage in Washing" of Technical Committee 38 — Textiles, International Organization for Standardization, suggestions were made by some of the ISO member nations to still further increase the load to as much as 15 pounds and to increase the length of the test from 60 minutes to 120 minutes.

Our Committee therefore decided to undertake an exhaustive series of interlaboratory tests on 16 cotton and rayon fabrics to check these two points, and the results were published in *American Dyestuff Reporter* 43, No. 12, June 7, 1954.

They showed rather surprisingly close similiarity of results obtained by all of the various laundering methods.

More recently, the Committee has endeavored to approach the problem of shrinkage tests from the point of view of determining practical levels of cleanability used by a consumer regardless of fiber content, fiber construction, or fabric finish, and we believe progress has been made.

Recently, AATCC Tentative Test Method 91-1958, "Dimensional Changes in Woven Textiles (Excluding Wool)" was developed and accepted for publication in the 1959 *AATCC Technical Manual.* This method establishes four procedures, varying from very mild to very severe conditions of washing, which are used commonly in the commercial laundry and home. The complete test method appears in the October 20, 1958 issue of *American Dyestuff Reporter* 47, No. 21, P731-P732.

With this test fabric, specimens are washed in a cylindrical reversing wash wheel, using one of several procedures which differ in temperature and time of agitation, after which they are extracted and pressed dry on a flat-bed press.

Test Number I is identical to the old Tentative Test Method 40-1957 (mild action, low temperature conditions equivalent to hand washing), in which the wash temperature is 100° F. Test Number IV is identical to Standard Test Method 14-1953, which was used for determining shrinkages of woven cotton, linen and mixed cotton and linen fabrics to rigorous commercial or home laundering and in which the washing is at the boil. We believe tests Number II at 120° F and III at 160° F fill the gap which existed between the existing very-mild and very-severe washing procedures and, by the way, take care of blends.

Incidentally, before proposing Test Method 91-1958, the Committee prepared a very complete and interesting research report entitled "Laundering Procedures in the Commercial Laundry and in the Home", which was published in *American Dyestuff Reporter* 47, No. 6, P187-P190, March 24, 1958. This information was the basis for developing the additional wash test Numbers II and III.

In its continuing work, the Committee studied dimensional restorability, which we defined as the maximum amount of stable change that can be induced by stretching or wearing a fabric measured on the basis of that fabric when washed or flat-bed pressed. We recently approved a tentative test method 19-1959, soon to be submitted to the *American Dyestuff Reporter* for publication. This test method is intended to determine the dimensional restorability of woven fabrics which are restored in practice by hand ironing or wearing after laundering. It utilizes the Tension Presser as the test instrument.

Two projects remain.

The Committee is rewriting three current tentative test methods concerning dimensional changes in woolen fabrics. These are TTM 73-1953, "Shrinkage of Wool Hose, Accelerated Test;" TTM 74-1953, "Relaxation and Felting Shrinkage of Wool Knit Fabrics, Accelerated Test;" and TTM 41-1952, "Dimensional Changes in Wool Textiles; Accelerated Test." These will be combined into one test for determining dimensional changes of woven and knitted wool fabrics.

At present, the Committee is working on the final gap which needs to be filled regarding dimensional changes in textile fabrics, namely a test covering dimensional changes in knitted textiles (excluding wool). This work is being undertaken in cooperation with an American Society for Testing Materials task group, which has been studying the same subject.

We hope to have this work finished by the end of 1959.

President's Remarks

WELDON G HELMUS
Fair Lawn Finishing Co
AATCC President

MR CHAIRMAN, distinguished hosts and members of AATCC:—

On behalf of AATCC, I would like to take this opportunity to express our appreciation to you, our Canadian counterparts, for your hospitality and your thoughtfulness in inviting us to Montreal.

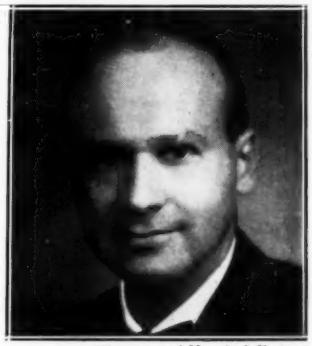
An occasion such as this gives us the opportunity to recognize the Canadian members of our Association, of which there are more than 150. We highly value this segment of our membership and I think that this joint technical session underscores the many common interests which the two societies have. When the program was under development, it immediately became apparent that both of us were concerned with specific areas of the wet-processing industry, so that it was comparatively easy to select people from our societies who could team together to handle the various topics on the program. Once again this demonstrates that, in science and technology, geographical frontiers and political borders have little meaning.

At this time, I would like to extend to all our Canadian friends both an official and a personal invitation to attend our 1959 National Convention in Washington, DC, October 7 through 10. The Chemical Finishing Conference under the sponsorship of the National Cotton Council will also be held October 7, so that there is a double feature which we hope will bring you to Washington.

Once again, let me say how happy we are to be here with you. Our thanks for all that you have done to make us comfortable and feel at home.

TECHNICAL PROGRAM FOR 1959 AATCC CONVENTION

ARNOLD M SOOKNE, associate director, Harris Research Laboratories, Inc, Washington, DC, and chairman, Technical Program, 1959 AATCC Convention, has announced the following schedule for October 8 and 9:



(Courtesy of Harris & Ewing)
ARNOLD M SOOKNE
Chairman
Technical Program
1959 AATCC Convention

Thursday, October 8, 1959

9:15 AM— 12:15 PM—SYMPOSIUM I— "WASH AND WEAR"

Chairman: Paul B Stam, J P Stevens & Co, Inc.

"The Consumer's Point of View"—Genevieve M Smith, Sears, Roebuck and Co

"Man-made Fibers for Wash and Wear"—James R Bercaw, Textile Research Laboratory, E I duPont de Nemours & Co, Inc

"Progress in Wash and Wear Wool"—John F Krasny and John Menkart, Harris Research Laboratories, Inc

"Man-made Cellulosic Fibers in Wash and Wear"—A B Hilton, G V Lund and A E Martin Jr, Courtaulds (Alabama) Inc

"Retrospect and Prospect: Progress and Problems in Wash and Wear"—Pauline Berry Mack, Texas Woman's Univ

2:15 PM—4:30 PM—SYMPOSIUM II—"DYEING AND FINISHING OF BLENDS"

Chairman: James E Greer, Dyeing and Finishing Div, Burlington Mills Corp

"Recent Developments in Finishing"—Henry H Latham, Arkansas Co

"Recent Problems in the Dyeing and Finishing of Dacron Blends"—Paul L Meunier, E I duPont de Nemours & Co, Inc

"Techniques for Union Dyeing Blends of Zefran and Cotton with Vat Dyes"—R L Burgess, Textile Development Dept, Dow Chemical Co

"Dyeing and Finishing of Special Blends of Arnel with Acrylics or Cotton in Circular Knit Applications"—Ralph E Lacy and Jack A Dayvault, Celanese Corp of America

Friday, October 9, 1959

9:15 AM—12:15 PM—SYMPOSIUM III—"NEW DYEING AND FINISHING PROCESSES"

Chairman: Fred Fortess, Celanese Corp of America

"Recent Advances in the Pressure Beam Dyeing of Synthetic Fabrics"—Walter J Newcomb, Gaston County Dyeing Machine Co, and George C Ward, Dyeing and Finishing Laboratories, Celanese Corp of America

"Twelve Million Yards of Natural and Man-made Fibers Dyed on the Swedish Pad-Roll Dyeing Machine"—Robert M Lesh, Northern Dyeing Corp

"Present-day Trends in Bleaching"—Bernard K Easton, Inorganic Research and Development Dept, Food Machinery and Chemical Corp

"The Monforts Reactor—A New Continuous Dyeing Machine"—Joachim Roehl, A Monforts Maschinenfabrik, M Gladbach, Germany

"Dyeing Blends of Dacron Polyester Fiber and Cotton by the Thermosol Process"—Joseph J Iannarone Jr and William Wygand Jr, E I duPont de Nemours & Co, Inc

2:00—4:30 PM—INTERSECTIONAL CONTEST

Chairman: Thomas J Gillick Jr, American Felt Co

AATCC Calendar

COUNCIL, COUNCIL COMMITTEES, RESEARCH COMMITTEES

Sept 10-11 (Hotel McAlpin, New York, NY); Sept 10—Council Committees and Research Committees; Sept 11 (AM)—ECR, TCR; Sept 11 (PM)—Council

NATIONAL CONVENTIONS

Oct 7-10, 1959 (Sheraton Park and Shoreham Hotels, Washington, DC); Oct 6-8, 1960 (Sheraton Hotel, Philadelphia, Pa); September 28-30, 1961 (Buffalo, NY); 1962 (Southern Region)

DELAWARE VALLEY SECTION

Sept 18 (Reading, Pa); Oct 23 (Kugler's Restaurant, Philadelphia, Pa.

METROPOLITAN SECTION

Sept 18 (Meeting & field trip, Geigy Chemical Corp, Arsley, NY); Oct 16, Nov 20 (Kohler's Swiss Chalet, Rochelle Park, NJ); Jan 15, Feb 19 (Hotel New Yorker, New York, NY); Mar 18, Apr 22 (Swiss Chalet); May 20 (Ladies Night—Swiss Chalet); June 1960 (Outing)

MID-WEST SECTION

Oct 24 (Bismarck Hotel, Chicago, Ill)

NIAGARA FRONTIER SECTION

Sept 25 (Niagara Falls, Ont, Canada); Dec 11 (Annual business meeting, Buffalo, NY)

NORTHERN NEW ENGLAND SECTION

Sept 25 (Outing—Wachusett Country Club, West Boylston, Mass); Oct 16 (Lexington Inn, Lexington, Mass); Dec 4 (Joint symposium with ASME Textile Engineering Div, Smith House, Cambridge, Mass); Jan 15 (Woodlawn Golf Club, Newton, Mass)

PIEDMONT SECTION

Sept 25-26 (Barringer Hotel, Charlotte, NC); Jan 22-23 (Poinsett Hotel, Greenville, SC); April 2-3 (Hotel Robert E Lee, Winston-Salem, NC); June 3-4 (Outing—Ocean Forest Hotel, Myrtle Beach, SC); Sept 23-24, 1960 (Hotel Charlotte, Charlotte, NC)

RHODE ISLAND SECTION

Sept 18 (Management Night); Oct 23 (Prov Eng Soc, Providence, RI); Dec 4 (Annual Meeting—Johnson's Hummocks Grille, Providence, RI)

SOUTH CENTRAL SECTION

Sept 19 (Hotel Patten, Chattanooga, Tenn)

SOUTHEASTERN SECTION

Sept 12 (Ida Cason Callaway Gardens, Pine Mtn, Ga); Dec 5 (Atlanta Athletic Club, Atlanta, Ga)

WESTERN NEW ENGLAND SECTION

Sept 25 (Blake's Restaurant, Springfield, Mass); Oct 23 (Annual Meeting—Rapp's Restaurant, Shelton, Conn); Dec 4 (Hartford, Conn)

Activities of the Local Sections

Southeastern

TWO HUNDRED FIFTY SEVEN members, wives and guests were in attendance June 12-14 as the Southeastern Section held its 10th annual Summer Outing at Radium Springs, Ga.

The Outing featured two events which were unprecedented for the Section, both of which were highly successful. One was a trap-shooting contest, planned by J Elwood Barbre, Pepperell Mfg Co, Outing cochairman. The other was a well-attended meeting of the Section's Research Committee, headed by James H Stradley, E I duPont de Nemours & Co, Inc.

In addition to the trap shoot, other activities included casting, horseshoe

L to r: J Elwood Barbre, Pepperell Mfg Co, cochairman, Outing Committee; E R Ravenel, Morton Salt Co, Outing chairman; Frank Cooper, Dixie Belle Miss, chairman, Entertainment Committee

H Gillespie Smith, American Cyanamid Co, AATCC vice president, Southern Region, tries his hand at bait casting.

J Elwood Barbre, Pepperell Mfg Co, winner of the trap-shooting event

R B Hallowell, Coats and Clarks, Inc, Southeastern Section chairman

William B Amos (left), Jefferson Mills, Inc, vice chairman, Southeastern Section; H Gillespie Smith, American Cyanamid Co, AATCC vice president.

Past chairman William B Griffin, Dexter Chemical Corp, made the longest cast in the bait-casting contest—into the top of a tree

pitching, golf, Bingo, and bridge and canasta for the ladies.

On Saturday evening, those in attendance enjoyed a banquet and dance. Members and guests enjoyed a "Southern Style" breakfast the next morning, courtesy of the Caldwells, who operate Radium Springs Lodge.

Plans for the outing were handled by Edward R Ravenel, Morton Salt Co.

Metropolitan

THE 1959 Annual Outing and Golf Tournament of the Metropolitan Section was held June 19 at the North Jersey Country Club, Wayne Township, NJ, with 425 persons in attendance. The Outing was partly marred by showers in the late morning and early afternoon, but the weather cleared later in the afternoon, permitting all who desired to play golf to do so.

Cochairmen of the Outing were M Costello, Jacques Wolf & Co, and Chris W Farrell, Althouse Chemical Co. Serving on the Committee were Eugene J Grady, Jacques Wolf & Co; Richard P Monsaert Jr, American Felt Co; Gerard Heine, Koppers Co, Inc; and D G Zachery, American Cyanamid Co.

Golf honors went to the following:

Low Gross—Martin E Mangarelli, Franklin Finishing Co

Low Net—tie between Joe Stack, United Wool Piece Dye Co, and Francis A Kraft, Becco Chemical Div, Food Machinery & Chemical Corp

Nearest to Pin—John S Thackrah, E I duPont de Nemours & Co, Inc

Putting—E Sgrosso, Ramapo Piece Dye Works.

Runners-up in the various golfing events were:

Low Gross—Richard Jones, Royce Chemical Co; John Komninos, Waldrich Co; Raymond Cote, Steinfield Fabrics; and A W Burner, Creative Public Relations

Low Net—Albert E Johnson, National Institute of Drycleaning; J Poliotti, Hart Products Corp; and P J Ketrick, Ultra Chemical Works

Nearest to Pin—Marvin Klapper, *Womens Wear Daily;* Tom O'Brien, Sandoz Inc; Charles Lyle, Brown Chemical Co; and A Sherman, guest

Putting—F Hewit, American Cyanamid Co; D Zachary, American Cyanamid Co; and R E Milana, Atlantic Chemical Co.

AATCC President Weldon G Helmus was in attendance at the Outing and delivered a short talk on what AATCC membership means to the individual and to the company.

Membership Applications

NEW ENGLAND REGION
NORTHERN NEW ENGLAND SECTION

Senior

Herbert Glassman—Dyer, Security Mills Inc, Newtonville, Mass. Sponsors: W E Coulton, S G Smith.

Associate

Charles S Letcher—Technical sales, Chemical Div of General Mills Inc, Boston, Mass.

RHODE ISLAND SECTION

Senior

John V Simonian—Chemist, Crown Chem Co Inc, Providence, RI. Sponsors: R A Pingres, E N Alexander.

CENTRAL ATLANTIC REGION
METROPOLITAN SECTION

Senior

Nicholas D Lincoln—Project director, Chicopee Mfg Corp, Milltown, NJ. Sponsors: W S Barnard, P Surowitz.

Jacob Solinger—Consultant, Jacob Solinger, New York, NY. Sponsors: G O Linberg, J J Press.

Associate

Shojiro Miyamoto—Representative of New York Office, Kureha Spinning Co, New York, NY.

Edward L Mass—Purchasing & converting, Sure-Fit Products Co, New York, NY.

Transfer from Student to Junior

Nick J Christodoulakis—Trainee, Eureka Printing Co, Clifton, NJ.

HUDSON-MOHAWK SECTION

Transfer from Student to Junior

Ronald P Chaves — Research chemist, Mohasco Industries Inc, Amsterdam, NY.

DELAWARE VALLEY SECTION

Transfer from Student to Junior

Laurence J Moran—National Guard, Philadelphia, Pa.

SOUTHERN REGION
WASHINGTON SECTION

Senior

Richard N Hopper—Asst dir research, National Institute of Rug Cleaning Inc, Bethesda, Md. Sponsors: J W Rice, F Forziati.

PIEDMONT SECTION

Senior

Francis A Chesanek—Supt of embossing, Old Fort Finishing Co, Old Fort, NC. Sponsors: R J Lyons, T Carter.

Donald G Lashmit—Asst dyer, Lenoir Hosiery Mills Inc, Lenoir, NC. Sponsors: H W Boyd, A T Glenn.

William J Smith—Purchasing agent, Union Bleachery, Greenville, SC. Sponsors: F Jordan Jr, E G Jones.

Junior

Albert B Bullington Jr—Chemist, Union Bleachery, Greenville, SC. Sponsors: H C Hurt, E G Jones.

Transfer from Student to Junior

I Duane Alewine—Senior chemist, Tex Div, Texize Chemicals Inc, Greenville, SC.

Joseph M Fox—Chemist, Union Bleachery, Greenville, SC.

Carle W Mason Jr—Trainee, Chatham Mfg Co, Elkin, NC.

E Randall Poole—Training program, Carlisle Finishing Co, Carlisle, SC.

Frederick M Warlick Jr—Resin finishing technician, Res & Dev Lab, Mooresville Mills, Mooresville, NC.

SOUTH CENTRAL SECTION

Transfer from Student to Junior

Eddie M Barringer—Trainee, Dixie Mercerizing Co, Chattanooga, Tenn.

SOUTHEASTERN SECTION

Senior

Nell Skaggs Glasscock—Associate professor, & associate home economist, Alabama Polytechnic Institute, Auburn, Ala. Sponsors: J C Sherrill, W N Linfield.

Transfer from Student to Junior

Bobby B Mosley—Designer, Eagle Phenix Mill, Columbus, Ga.

WESTERN REGION
MID-WEST SECTION

Senior

Alvin J Kieft—Chief chemist, Buckeye Fabric Finishing Co, Coshocton, Ohio. Sponsors: H F Lawton, R G Thomas.

Max Presser—Research chemist, Industrial Rayon Corp, Cleveland, Ohio. Sponsors: T G Finzel, W C Walter Jr.

UNCLASSIFIED

Elmar B O Limpach—Head of Chemistry Dept, Textilausrustungsgesellschaft Schroers & Co (TAG), Krefeld, West Germany. Sponsors: H Luttringhaus, C W Kuhl II.

John E G Walsh—Dyer, La France Textiles, Woodstock, Ont, Canada. Sponsors: R Jesel, K A Lister.

"THE APPLICATION OF VAT DYES"

Monograph No. 2

American Association of Textile Chemists and Colorists

MONOGRAPH NO. 2, which deals with "The Application of Vat Dyes" was prepared by a board of editors and collaborators in the American Association of Textile Chemists and Colorists. This group represents a complete cross-section of the entire industry so that the text of the Monograph represents information both from laboratory and practical plant standpoints.

The Monograph contains approximately 385 pages with contents of various chapters as follows:

I HISTORY — Natural Indigo and Tyrian Purple; Development of Synthetic Vat Dyestuffs; History of Application of Vat Dyes; The Application of Vat Dyes to Fibers Other Than Cotton.

II PRINCIPLES OF VAT DYE APPLICATION — Types and Forms of Vat Dyes in Commerce; Chemistry of Application; Stripping and Redyeing Faulty Vat Dyeings; Fastness; Print Discharges; Change of Shade in Artificial Light; Dichroic Dyes.

III APPLICATION TO COTTON RAW STOCK — Equipment Used; Methods of Color Application; Typical Examples.

IV APPLICATION TO COTTON SKEINS—Equipment and Methods.

V APPLICATION TO COTTON WARPS—Short Chain Method; Long Chain Warp Dyeing; Continuous Pigment Padding Method.

VI APPLICATION TO COTTON PACKAGES—The Package; Package Dyeing Machines; Chief Factors in Dyeing Packages with Vat Dyestuffs; Dyeing Speed and Levelling Power of Vat Dyes; Dyeing Methods; Oxidation and Finishing; Vat Dyeing on Beams; Illustrative Dyehouse Procedures.

VII APPLICATION TO COTTON PIECE GOODS—History; Jig Methods; Padding Methods; Continuous Methods; Overhead Reel Method; Vat Dyeing of Cotton Narrow Fabrics.

VIII HOSIERY — Application of Colors to Cotton Hosiery; Application of Colors to Mixed-Fiber Hosiery.

IX APPLICATION TO FIBERS OTHER THAN COTTON—Vat Dyeing of Viscose Rayon; Vat Dyeing of Cellulose Acetate; Vat Dyeing of Nylon; Vat Dyeing of Animal Fibers.

X GENERAL PRINCIPLES OF PRINTING — Piece Goods; Forms Other Than Piece Goods.

XI PRINTING — Direct Printing with Vat Dyestuffs; Discharge Printing with Vat Dyestuffs; Goods Dyed After Printing.

XII INDIGO—History and Properties; Various Indigo Vats and their Preparation; Dyeing of Cotton with Indigo; Dyeing of Wool with Indigo; Application of Indigo to Cotton Printing; Indigo Derivatives.

XIII THE USE OF VAT DYES AS PIGMENTS OR IN NONTEXTILE APPLICATIONS — Paper, Rubber, Plastics and Resins; Fireworks; Paints and Lacquers; Resin-Bonded Pigments; Miscellaneous.

XIV LEUCOESTERS OF VAT DYESTUFFS — History and Chemistry; Properties; Application of Leucoesters; Lightfastness of Leucoesters; Relative Cost of Vat and Soluble Vat Dyeing.

XV TABULATION OF VAT DYESTUFFS—Formulae and Properties; Numerical Index; Alphabetical Index; Trade Names of American-Made Vat Dyes.

AUTHOR INDEX

SUBJECT INDEX

From the foregoing, it is seen that this Monograph gives a very comprehensive description of all of the factors involved in the application of vat dyes. In all discussions of application procedure, practical working formulas are given. This publication is of interest to all persons who are either producers or consumers of vat dyes.

The price of "The Application of Vat Dyes" is $5 per copy, postpaid, to members; to nonmembers it is $6 per copy. Quantity discount prices are as follows:

100 Copies	$2.75	each
50 "	3.00	"
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10 "	3.75	"

Please use the order form at the bottom of this page.

George P Paine, Executive Secretary
American Association of Textile Chemists and Colorists
P O Box 28, Lowell, Massachusetts

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Name ..... Address .....

• PATENT DIGEST •

PAUL WENGRAF

PRINTING COPPERABLE DIRECT DYES———Cuprous thiocyanate as complex-forming agent added D,2,03

USPat 2,840,444 (Ciba Ltd——Kraehenbuehl——June 24, 1958)

The preamble to this patent refers to a known method for improving the fastness of prints with copperable direct dyes. It calls for printing with the copper-free dyestuff plus a solution promoter (urea), an electrolyte (disodium phosphate), a mild oxidizing agent (sodium nitrobenzene sulfonate, ie, Ludigol), and a thickener; then fixing the print by steaming and aftertreating with a soluble copper salt. This process is said to involve the risk of staining the white, nonprinted areas by the copper salts. Incorporation of the copper salt into the printing paste proper would be desirable in order to avoid the copper salt aftertreatment, but most copper salts used hitherto for aftercoppering are very soluble and form an insoluble dyestuff complex in the printing paste before the dye can penetrate the fiber to be fixed there by steam.

It has been found that cuprous thiocyanate, obtainable from cupric salts and alkali thiocyanate (col 1, lines 42-44), is sparingly soluble and thus will not form insoluble dyestuff-copper complexes in the paste at room temperature (up to 30°C). At elevated temperatures, particularly upon steaming, fixation of the dye in the fiber and formation of the copper complex occur simultaneously.

A great number of copperable polyazodyes useful in this method are enumerated. A formula for a printing paste reported in one of the examples calls for the dyestuff, thickener (neutral tragacanth mucilage), urea (15%) as a solution promoter, disodium phosphate (2%), and 35% of a 50% concentrated cuprous thiocyanate paste. The prints are dried, steamed, and washed with a five g/l soap and two g/l soda ash solution at 40°C.

References cited by the Patent Office:

"Principles and Practice of Textile Printing" by Knecht and Fothergill, 3rd ed (1936) pages 237-8. The preparation of cuprous thiocyanate by double decomposition of cupric sulfate and potassium thiocyanate in the presence of a reducing agent is described. It may be used in aniline black formulations.

USPat 2,148,659 (Ciba /1939): direct dyeings of improved fastness are obtained from azo dyestuffs capable of forming sparingly soluble metal compounds. Dyeing and aftertreatment are conducted with the metal-yielding agent in the same bath, eg, dyeing with a disazo dye at or near the boil, thereupon adding an alkaline copper-salt solution, and continuing the procedure at the boil.

BLEACHING WITH CHLORITE ———Evolution of chlorine dioxide controlled by organic acid esters B,1

USPat 2,842,422 (Soc Rhodiaceta——Mosse——July 8, 1958)

It is well known that chlorine dioxide, which for the bleaching of textiles is developed by the addition of an acid or acid salt to chlorites, has harmful physiological effects. The purpose of the current invention is to avoid this inconvenience while taking advantage of the superior bleaching effect of chlorite solutions.

According to the current specification, it has been observed that results similar to those generally obtainable only by acid chlorite bleaching can be attained by adding to the alkali- (or earth alkali-) chlorite solution an ester of a nonoxidizable organic acid, eg, ethyl lactate, ethyl acetate, glycerol monoacetate, butyl phthalate, etc. Solutions containing the esters plus chlorites are used at elevated temperatures; they are stable in the cold and can be reused upon heating. It is reported that no perceptible evolution of chlorine dioxide occurs.

Example: Two grams of polyacrylic fibers were immersed in one liter of a solution containing three g/l sodium chlorite and one g/l ethyl lactate. After the goods were treated for one hour at 100° C in this solution at pH of 6.5, rinsed and dried, a very white fabric was obtained. No evolution of chlorine dioxide could be noticed.

Among the references cited by the Patent Office:

Brit Pat 399,319 (Ciba/1933): addition of sulfonated aromatic dicarboxylic acid esters (eg, sulfophthalic acid ester of amylalcohol) to hypochlorite baths to improve the penetration of the bleaching liquid.

USPat 2,482,891 (Mathieson Chem Co/1949): dry mixtures of chlorites with organic anhydrides (phthalic anhydride) evolve chlorine dioxide upon contact with water.

An article by Folgner in *Am Dyestuff Reptr 27*, 476 (1938), abstracted from *Monatsh f Textil-Ind* (1937), enumerates hydrogen peroxide-stabilizing agents. Generally these are organic acids (citric, tartaric, etc); optionally also "certain salts and esters."

DYEING POLYESTER OR CELLULOSE ACETATE FIBERS ———Sulfonic acid groups of anthraquinone dyes removed by reduction C,4,07

USPat 2,843,448 (Sandoz Trust——Thummel et al——July 15, 1958)

Certain water-soluble dyes of the anthraquinone group, namely those sulfonated in the 2-position of the anthraquinone nucleus, will dye (or print) cellulose ester or synthetic fibers of the linear aromatic polyester type (terylene or Dacron) in lightfast shades. Hitherto, anthraquinone dyes have been applied to these fibers in the form of dispersions. This method reportedly posed great problems, particularly when the dyes were applied in circulating baths where a filtering effect of the material to be dyed could be observed. Thus a dyeing method utilizing solubilized dyes appears to be preferable, but past results with these dyes proved to give weaker shades.

According to the current patent, anthraquinone dyes sulfonated in 2-position are applied in a reducing bath. Addition of a swelling agent is optional. It has been observed that the sulfonic acid group is split off, in this event, during dyeing so that the dye is finally present in nonsulfonated form, ie, in an insoluble state in the fiber. Reducing agents used in this process are zinc formaldehyde sulfoxylate, sodium formaldehyde sulfoxylate, or sodium formaldehyde bisulfite. Suitable swelling agents are tetraline, 2-hydroxy-1-1'-diphenyl and some others known in the carrier dyeing practice.

Example: One hundred parts polyester fiber are dyed under pressure at a temperature above 110°C for 30 minutes with a dyeing liquor containing 4 p of the potassium salt of 1-OH-4-phenylamine-anthraquinone-2-sulfonate and 1.5 p zinc formaldehyde sulfoxylate in 3000 p water. A level violet dyeing of good fastness to light

and to washing reportedly results.

Among the references cited by the Patent Office:

USPat 1,833,250 (Ciba/1931): leuco products of anthraquinone sulfonate dyes (obtained by reduction of anthraquinone sulfonates) were observed to split off the sulfonic acid group at elevated temperatures, thus regenerating the insoluble, nonsulfonated dye.

USPat 1,904,815 (Ciba/1933): printing on cellulose acetate fibers with sulfonic acids of aminoanthraquinones, the sulfo group of which is aromatically bound, and then steaming.

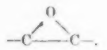
SHRINKPROOFING OF WOOL OR WOOL-CONTAINING FABRICS ——— Polyether-polyepoxides applied A,2,04

USPat 2,829,071 (Shell Development Co——Schroeder——April 1, 1958)

According to the preamble to the current patent, results in the shrinkproofing of wool hitherto have been quite unsatisfactory with respect to the feel of the treated fabrics and the durability of the effect.

These disadvantages reportedly are avoided completely when wool or wool-containing fabrics are impregnated with an aqueous medium of polyether polyepoxide, particularly a glycidyl polyether of a polyalcohol and an amine catalyst, and then subjected to an elevated temperature to cure the polyester polyepoxide within the fibers. Outstanding shrink resistance, which is said to persist even after five launderings, and good water repellency are claimed.

Quite generally, the products to be applied are characterized by a content of at least two ether linkages . . .-O-. . .and a plurality of 1-2 epoxy groups



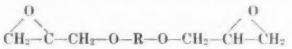
A great number of compounds corresponding to these conditions is enumerated (col 2, line 62 to col 4, line 26). The various products are described in terms of the epoxy equivalency, which refers to the average number of epoxy groups contained in the average molecule of the compound. A method for determining this factor is presented in col 2, lines 38-48. The main categories are as follows:

Polyether A: Glycidyl polyethers of polyalcohols, such as glycerol, are reacted with epichlorohydrin. Boron trifluoride is used as a catalyst. This group provides for exceptionally fine shrink resistance (col 2, lines 38-48).

Polyether B: Ethylene oxide is bubbled through a polyalcohol and the product is reacted with epichlorohydrin as above.

Polyether C: An aliphatic polyalcohol containing 2 - 10 atoms, eg, hexane triol, is reacted with epichlorohydrin.

Polyether D: The aliphatic polyalcohol of "Polyether C" may also be replaced by a dihydric phenol; in this event, a monomer of the constitution



results wherein "R" stands for the divalent radicle of the dihydric phenol or bisphenol dissolved in epichlorohydrin and reacted at elevated temperature.

The polyether polyepoxides of varying constitution and degree of polymerization are applied together with amine catalysts, such as primary amines, polyalkylene polyamines, dicyandiamide, melamine, and so on (col 7, lines 15-40) in an aqueous medium. Since many of the polyepoxide ethers are insoluble, they have to be emulsified, eg, with monooleate of sorbitan polyoxyethylene. The treated fabrics preferably are dried for a short time on the frame and then exposed to relatively high temperatures (130-190° C). Good shrink-resistance also is said to be obtained on wool blended with other natural or synthetic fibers.

Example (I): Polyether A (epoxy equivalency 2.13 and mol weight approx 324) and a polyglycol fatty ester (as an emulsifier) were stirred into water and a solution of polyvinylalcohol and diethylene triamine (catalyst) was added. Light wool flannel was impregnated in this solution, squeezed to a 100% pick-up, framed and dried for seven minutes at 100° C, and cured for five and one-half minutes at 160° C. The fabric reportedly had a soft feel and excellent shrink resistance. A parallel experiment with an acid-type catalyst showed inferior results. Other examples (II-VIII) refer to results obtained with "Polyethers B, C and D" as shrinkproofing agents.

Among the references cited by the Patent Office:

USPat 2,528,932 (Shell Dev/1950) describes a spreadable mixture of glycidylethers of polyhydric phenols and a liquid monoepoxy compound, such as phenol-glycidylether, to be cured in the presence of amines and used as an adhesive.

USPat 2,606,810 (Am Cyanamid/1952): wool may be rendered shrinkproof by immersing it in an organic solvent solution of an epoxy group containing a polymerizable monomer (glycidylmethacrylate), a monomer different from the latter (eg, ethylacrylate), and an appropriate catalyst, and then drying and heating to insolubilize the above resin. [Cf *Am Dyestuff Reptr 42, 213* (1953)]

USPat 2,752,269 (Shell Dev/1956): crushproof cellulosic textiles showing no chlorine retention whatsoever may be obtained by a treatment with glycidyl polyethers of polyhydric alcohols or dihydric phenols. [Cf *Am Dyestuff Reptr 46, 221* (1957)].

BLEACHING OF CYANOETHYLATED COTTON with hydrogen peroxide-phosphate solution B,2

USPat 2,860,945 (Du Pont——Dustman Jr——Nov 18, 1958)

Cyanoethylated cotton, which is prepared by reacting cotton under alkaline conditions with acrylonitrile, represents a relatively new type of fiber. Known advantages of this material are better resistance to microbial attack, wet and dry heat and abrasion as well as greater adsorption of certain dyes. [Cf *Am Dyestuff Reptr 43,* 774-9 (1954)]. On the other hand, bleaching operations reportedly cause a substantial loss of nitrogen content and, consequently, of desirable properties due to the presence of cyanoethyl groups.

According to the current specification, cyanoethylated cotton can be bleached without any significant reduction of the N-content by treatment with a H_2O_2 solution made alkaline by molecularly dehydrated phosphate, eg, tripolyphosphate, pyrophosphate or hexametaphosphate of sodium. A special improvement is noted when the fibers are pretreated in a formaldehyde-sulfoxylate solution.

Example: Untreated greige goods of cyanoethylated cotton, having an N-content of approx 3.16-3.19 and a reflectance of 34.2% , was bleached in different peroxide solutions alkalinized with borax and/or sodium silicate and tetrasodium pyrophosphate, $Na_4P_2O_7$. Reflectance and measurement of the N-content after bleaching proved that the pyrophosphate-neutralized peroxide imparted a high reflectance (above 57) without substantial loss in N (final content, 3.13-3.14).

Among the references cited by the Patent Office:

U S Pat 2,231,426 (Becco/1941) describes a two-step bleaching process, first at a lower liquid ratio at a temperature of approx 125°F, then at a higher liquid ratio at 160-180°F. Alkalinity was obtained by adding phosphates, among them pyrophosphates.

Chemical Abstracts 34, 8294[1] (1940) (abstracted from a paper by S Morris): wool is bleached in a solution of H_2O_2 containing Gardinol WA as a leveling agent and sodium pyrophosphate as a stabilizing agent.

News of the Trade

IFATCC London Congress

The Society of Dyers and Colourists will serve as host society to the London Congress of the International Federation of Textile Chemists and Colourists September 16-18.

A full program of lectures on developments in dyeing, printing and finishing is scheduled for Church House, Westminster, London as follows:

Wednesday, Sept 16 — "Self-smoothing Fabrics," J T Marsh (Great Britain); "Investigations into the Chlorine Retention of Resin-treated Textiles," W Schefer (Switzerland); "Physico-chemical Studies of the Effect of Carriers on the Dyeing of Polyester Fibers," P Rochas and M Courmont (France); "Some New Results of Wool Chemistry," H Zahn (Germany).

Thursday, Sept 17 — "Recent Advances in the Application of the 'Pad-Roll' System," N Landquist, C Erikson and B Mellbin (Sweden); "A New One-bath Method for Continuous or 'Pad-Roll' Vat Dyeing," F L J van Lamoen and H Borsten (Holland); "Recent Developments in the Continuous Dyeing of Wool and its Mixtures with Synthetic Fibers," H R Hirsbrunner (Switzerland).

Friday, Sept 18 — "The Influence of Vat Dyestuff Structure on the Change of Shade of Dyes on Soaping," J Wegmann (Switzerland); "The Application of Reactive and Direct Dyes to Viscose Staple by Continuous Methods," R C Cheetham (Great Britain); "The Elimination of Barriness in the Dyeing of Continuous-filament Nylon Fabrics with Acid and Metallized Dyes," J B Robin (France); "The Influence of Dyestuff Chemistry on the Economic Development of the Textile Industry," J Nüsslein (Germany); "Reactive Dyes for Nylon," D F Scott and T Vickerstaff (Great Britain).

John Boulton, president of the Society and the International Federation, will officially open the Congress.

A program of excursions is planned to various historical spots throughout London, as well as a stop at Stratford-on-Avon for dinner and a Shakespeare play.

Highlighting the Social Program will be a reception on Wednesday at Guildhall, London, where members and guests will be entertained by The Orchestra of the Coldstream Guards.

The Dinner and Ball will be held Friday evening in The Great Room, Grosvenor House, Park Lane, London.

Chairmen of Congress Committees are Clifford Paine, Planning and Coordinating; Alfred Waddington, Finance; Richard C Oakley, Social; and Thomas Vickerstaff, Scientific and Technical.

Inquiries should be directed to John W Nicholls, general secretary, Society of Dyers and Colourists, Dean House, 19 Piccadilly, Bradford 1, Yorkshire, England.

Dow Announces New Facilities for Propylene Oxide, Glycols

Plant facilities for the production of propylene oxide, propylene glycol and dipropylene glycol have been completed by The Dow Chemical Company at its Louisiana Division at Plaquemine.

The only chemical company producing these products at more than one location, Dow manufactures propylene oxide at its Midland (Michigan) Division and Texas Division in Freeport. Propylene glycol also is produced at Dow's Texas Division.

NDMC Appoints Hayes Textiles as Southern Agent

National Drying Machinery Co, Philadelphia, Pa, has announced the appointment of the firm of Hayes Textiles, Inc, Spartanburg, SC, as Southern agent for sales of "National" loop, tenter, roll, piece goods, skein, heat setting, curing and other drying and conditioning equipment.

Cotton Fabrics for Special Uses Sought by USDA

Better cotton fabrics for special uses, such as blankets and certain types of outer garments, will be sought by the Lowell Technological Institute Research Foundation under a research contract recently let by the U S Department of Agriculture.

The contract was negotiated for the Department by the Agricultural Research Service Southern Utilization Research and Development Division, USDA center for cotton utilization research.

According to USDA, cotton has been gaining popularity in the fashion market for year-around wear for the past several years, because of its good looks, comfort, and excellent wearing qualities. It is suggested that its appeal might be enhanced, however, by increased resilience, which would maintain its appearance in wearing and laundering.

Previous investigations reportedly have shown that the application of some finishing resins will improve resilience. Under the new research project, these and other chemical treatments will be investigated further.

Yarns spun on the woolen systems are fuller, looser, more spongy or lofty than those spun on the cotton system due to less parallelization of the fibers. LTIRF, under its contract with USDA, will produce experimental fabrics of selected structures from yarns spun on the woolen system from untreated cotton, resin-treated cotton and blends of untreated and resin-treated cotton. Experiments will also be conducted in an effort to improve the dimensional stability, resistance to wrinkling, and warmth properties of such fabrics through application of selected resins, mechanical treatments and curing.

Such improvements, it is believed by USDA, would materially increase the market for cotton fabrics.

John J Brown, of the Cotton Mechanical Laboratory, Southern Division, will supervise the work for the Department. Emery I Valko has charge of the work at the Lowell Technological Institute.

Avisco Relocates Central Engineering Dept

American Viscose Corp has relocated its Central Engineering Department Offices from Philadelphia to Marcus Hook, Pa.

The move reportedly will centralize the technical functions of the Corporation at the Marcus Hook location where its Research and Development Division and Technical and Textile Service Department are also located.

Moreland Expands Plant

The Moreland Corp, reputedly the largest exclusive manufacturer of printing and industrial rollers in the US, has enlarged its Willow Grove (Pa) plant by nearly 30%.

While the addition is devoted exclusively to the production of large (up to 30' long by 6' dia) rollers, the new section reportedly permits the facilities for smaller rollers to be expanded into the area formerly devoted to large rollers.

Dow Badische Plant to Produce Acrylic Acid and Acrylic Esters

The Dow Badische Chemical Company recently announced plans to produce acrylic acid and methyl, ethyl, butyl and other acrylic esters at a plant under construction near Freeport, Texas.

Production is expected to begin next January, following completion of the plant in December. Construction has been in progress for the past eight months at a site adjacent to The Dow Chemical Company's Texas Division.

The Company, capitalized at $6,000,000, is owned jointly by Dow and BASF Overzee, NV, a subsidiary of Badische Aniline-& Soda-Fabrik AG of Ludwigshafen a Rhein, Germany.

The acrylic acid reportedly will be manufactured as a 94 percent technical grade by a direct process developed by Badische and believed new to the US chemical scene. Acrylic esters will be produced by esterification with methyl, ethyl, butyl and other alcohols.

Production will be sold through The Dow Chemical Company. Sample quantities are available through the Dow Plastics Sales Dept, Midland, Mich.

It is expected that the technical grade of acrylic acid will be sold for use as an intermediate in the production of higher acrylic esters, normally not available on the commercial market.

Other markets for acrylic acid and the esters will include synthetic fibers, resins, and textile finishing.

Earle B Barnes, director of organic research for the Texas Division of Dow, is president of the Dow Badische Chemical Co. Tim Toepel, from Badische, Ludwigshafen, is vice president and general manager.

Montecatini to Build Plant in W Va

Official announcement has been made of Montecatini's intention to begin construction of a $10 million chemical plant for the production of isotactic polypropylene and other polyolefins important in the manufacture of high-quality textile fibers and yarns, plastics, and elastomers.

According to Lucio Lucini, president of Novamont Corp, the wholly-owned American subsidiary of Montecatini which will operate the plant, the company intends to utilize a 200-acre tract it has acquired on the Big Sandy River at Neal, W Virginia.

Lucini reported that initial capacity of the new Montecatini plant is estimated at slightly more than 10 million lbs annually—a quantity which is subject to change as the project proceeds. Montecatini's first American plant is to be financed, he said, by the proceeds of a $10 million American bond issue just being completed in New York. Products of the plant will include the company's Moplen polypropylenes and other polyolefins developed and produced commercially in Italy by Montecatini.

Target date for completion of the plant is within two years. The plant will be owned and operated by the Novamont Corp, which acquired the Neal acreage more than two years ago.

The 200-acre site is directly across the Big Sandy River from the Leach plant of the Ashland Oil and Refining Co. It is feasible that this refinery will provide the hydrocarbon raw materials needed in the manufacture of polypropylene and other petrochemicals likely to be produced at Novamont's Neal plant, since most of these materials are manufactured from the products of crude oil refining.

Montecatini's headquarters are located in Milan, Italy. Sales of the Montecatini Group, which includes its affiliated and associated companies, last year reportedly amounted to more than $450,000,000. The Neal plant will be the company's first manufacturing plant in the United States although it has licensing agreements with six other American companies covering various Montecatini processes.

Armour Industrial Chemical Co Formed

Formation of the Armour Industrial Chemical Company, a new grouping, was announced recently by E W Wilson, executive vice president of Armour and Company. The new company will be under the direction of M E Lewis, general manager.

Armour Industrial Chemical, which comprises the fatty acids, fatty nitrogen derivatives and the ammonia divisions, moved its management and sales personnel from 1355 W Thirty-First Street to new and larger quarters at 110 North Wacker Drive, Chicago, on July 13.

B W Graham continues as director of sales for the fatty acid and derivatives divisions. The chemical research division remains under M R McCorkle and the McCook, Ill, chemical plant under C E Lang.

The Company has signed a long-term lease for over 10,000 square feet of space in the new Morton Salt Building.

ISCC to Hold 1960 Meeting in Philadelphia

The 29th Annual Meeting of the Inter-Society Color Council will be held at the Philadelphia Museum College of Art, Philadelphia, Pa, on Monday and Tuesday, April 11 and 12, 1960.

On Monday, April 11th, meetings of the color problems subcommittees will be held.

The annual business meeting will be on Tuesday morning, April 12th. During the afternoon a symposium will be held under the general title of "Creative Color". The banquet will be held on Tuesday evening.

For further information, write: Ralph M Evans, secretary, Inter-Society Color Council, Color Technology Division, Building 65, Eastman Kodak Company, Rochester 4, NY.

General Calendar

AMERICAN OIL CHEMISTS SOCIETY
Sept 28-30 (Statler Hotel, Los Angeles, Calif)

AMERICAN TEXTILE MACHINERY ASSOCIATION
May 23-27, 1960 (American Textile Machinery Exhibition, Auditorium, Atlantic City, NJ)

ASSOCIAZIONE COSTRUTTORI ITALIANI DI MACCHINARIO PER L'INDUSTRIA TESSILE
September 12-21 (3rd International Textile Machinery Exhibition, Milan Fair, Milan, Italy)

DRUG, CHEMICAL AND ALLIED TRADES SECTION, NY BOARD OF TRADE
Sept 17-20 (69th Annual Meeting, Sagamore Hotel, Bolton Landing, Lake George, NY)

INSTITUTE OF TEXTILE SCIENCE
Sept 17 (8th Scientific Session, National Research Council, Ottawa, Ontario, Canada)

INTERNATIONAL FEDERATION OF ASSOCIATIONS OF TEXTILE CHEMISTS AND COLOURISTS
Sept 16-18 (London Congress—Church House, Westminster, London, England)

INTER-SOCIETY COLOR COUNCIL
April 11-12, 1960 (29th Annual Meeting—Philadelphia Museum College of Art, Philadelphia, Pa)

NATIONAL COTTON COUNCIL
Oct 7 (Chemical Finishing Conference, Mayflower Hotel, Washington, DC)

SOUTHERN TEXTILE EXPOSITION
Oct 3-7, 1960 (Greenville, SC)

SYNTHETIC ORGANIC CHEMICAL MANUFACTURERS ASSOCIATION OF THE UNITED STATES
Sept 15, Oct 13, Nov 4 (Luncheon meetings at the Hotel Roosevelt, New York, NY); Dec 2 (Annual meeting and dinner—Hotel Roosevelt, New York, NY)

TEXTILE RESEARCH INSTITUTE
March 24-25, 1960 (30th Annual Meeting, Hotel Commodore, New York, NY)

AMERICAN DYESTUFF REPORTER

AN OPEN LETTER to the TEXTILE WET-PROCESSING INDUSTRY

It is expected that the 1959 A.A.T.C.C. Convention in Washington, D. C., October 7-8-9-10, may be one of the most heavily attended in the Association's history.

Geographically, the nation's capital is an ideal spot -- located, as it is, between the Southern, Middle Atlantic and New England textile areas.

The technical program including three important symposiums, wash-wear, dyeing and finishing of blends -- and new dyeing and finishing equipment, should contribute much in the interchange of technical "Know how".

Then too, this year about 75 producers will exhibit dyestuffs, chemicals and wet-processing equipment and all-in-all the success of the 1959 Convention, under the Southern Sections' sponsorship, seems assured.

The American Dyestuff Reporter (as official publication of A.A.T.C.C. Proceedings) will publish its special Convention Issue on September 21, 1959. Frankly, we are elated with the interest shown by our regular advertisers in the form of space reservations being received at this writing, definite proof that the textile wet-processing industry is assuredly on the up-grade.

Advertising in this Convention Issue will prove of great sales value because of concentrated readership by those who purchase dyestuffs, processing chemicals, machinery and all wet-processing equipment, as the issue will contain the following special features:

1. Abstracts of all technical papers
2. Complete official program
3. Exhibit descriptions
4. Pertinent staff-prepared articles

Additional copies will be ordered for distribution from our booth plus an increased mailing to wet-processing plants abroad.

Contract rates earned by regular advertisers will apply. New advertisers, full page $325.00; half pages $175.00; quarter pages $92.00.

Please note the following, as it is important --

DEADLINE FOR ADVERTISING COPY IS AUGUST 31, 1959

HOWES PUBLISHING COMPANY
44 East 23rd Street New York 10, N. Y.

McLean

Petree

Ralph Petree and Edward McLean have been promoted to the Arnold, Hoffman textile sales staff. Both men are presently in service as trainees, Mr McLean at Providence and Mr Petree in the company's Southern Area Laboratory.

Mr McLean joined Arnold, Hoffman & Co, Inc in 1958. His experience includes an 18-month period of practical application in the company's Technical Service Department. His territorial assignment will be announced later, on completion of his traineeship.

Mr Petree will be assigned to Arnold, Hoffman sales in the Southeastern market, after completion of his training period in the Company's Textile laboratories.

G Dent Mangum Jr, research coordinator in the School of Textiles at North Carolina State College, has resigned, effective August 31, to accept a position as vice president and director of research for National Textile Research, Inc, Durham, NC.

With the addition of Mr Mangum to the staff, National Textile Research, Inc reportedly will expand into the textile processing and physical testing areas. The company will also offer textile research facilities and services to the chemical fiber producers, the cotton textile industry, and allied textile interests.

It is reported that the firm's new laboratories will be equipped to perform tests on a wide range of commercial and experimental textile fibers, yarns, and fabrics. The expanded facilities are expected to be in full operation by January, 1960.

W H Payne, president of the Durham firm, states that National Textile Research, Inc, will continue to operate its program of product design in textiles.

Negotiations, Payne announced, are underway to add a new company plant, embracing 15,000 square feet of space, in Durham's Industrial Park. The company's expanding program, he stated, is in line with its intention of locating in the Research Triangle area.

Clark Hayden has joined Waumbec Dyeing and Finishing Co, Manchester, NH, in the capacity of general manager.

Mr Hayden was recently associated with Piermont Finishing Co. Prior to that time, he has served as vice president of United Piece Dye Works from 1947 to 1957.

Henschel

Gimeli

Steeves

Metro-Atlantic, Inc, has announced the appointment of Alfred N Henschel as supervisor of its Textile Auxiliary Application Laboratories, Ray Steeves to the sales and technical staff, and Joseph R Gimeli as assistant to the director of merchandising.

Mr Henschel, who will be located at the Company's main application laboratories in Centerdale, RI, was formerly New England technical service manager for Warwick Chemical Co. He also served as chief chemist at Princeton Knitting Mills, Watertown, Conn, and Clearwater Finishing Co, Clearwater, SC.

Mr Steeves will serve under Walter Sullivan, who is in charge of the Company's technical services for the woolen and worsted industry. Mr Steeves has had past associations with Ounegan Woolen Mills, Old Town, Me; Jenkins & Wright Inc, Los Angeles, Calif; Oregon Worsted Co, Portland, Ore; and Lincolnfield Mills, Lincoln, Me. He will work out of the main laboratories in Centredale, RI, and will service accounts over the entire northern area.

Mr Gimeli will assist Edward Starke, director of merchandising, and work out of the Company's New York office. He was formerly with Dan River Mills and Wellington Sears.

Williams

Endres

George R Williams has been appointed to the Development and Service Department of Emery Industries, Inc, Cincinnati, Ohio. He will be succeeded in Emery's New York Organic Chemical Sales office by Robert H Endres, who has been serving the Pittsburgh territory.

Under the supervision of J D Farr, acting director of development and service, Williams will be concerned with the development of markets for Emery's line of fatty acids and organic chemical derivatives. Among his initial assignments will be the coordination of all phases of the company's extensive program on the utilization of dimer acid in the production of urethane foam.

Since joining Emery's Organic Chemical Sales Department in 1956, Williams has served as sales representative in the greater New York area.

Endres, who joined Emery two years ago, will now have his headquarters at Emery's New York office. He will work under the direction of J P Clancy, Eastern District sales manager, handling the sale of Emery's organic chemical line.

John E Ward has been named resident manager of Nopco Chimie S A, Fribourg, Switzerland. A Howard Stuewe replaces Dr Ward as technical manager of Nopco's Foreign Department-Industrial.

Dr Ward joined Nopco in 1951. As manager of Nopco Chimie S A, he will work closely with all divisions of the Company in supplying technical assistance to Nopco customers in the European, Mediterranean, and African areas. He will also be available for special assignments and specific market surveys.

Mr Stuewe was previously with Stauffer Chemical Co, where he was engaged in market research and commercial chemical development. He had been with Nopco, from 1949 to 1956, as a chemist. He will be responsible for the development and marketing of new products, and the expansion of business at Nopco-Industrial S A, Mexico, as well as in the Central and South American markets.

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